THE GEORGE WASHINGTON UNIVERSITY

CATALOGUE

The George Washington University

Bulletin



THE SUMMER SESSIONS 1963

WASHINGTON 6, D. C.
DECEMBER 1962
Vol. LXII No. 5

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

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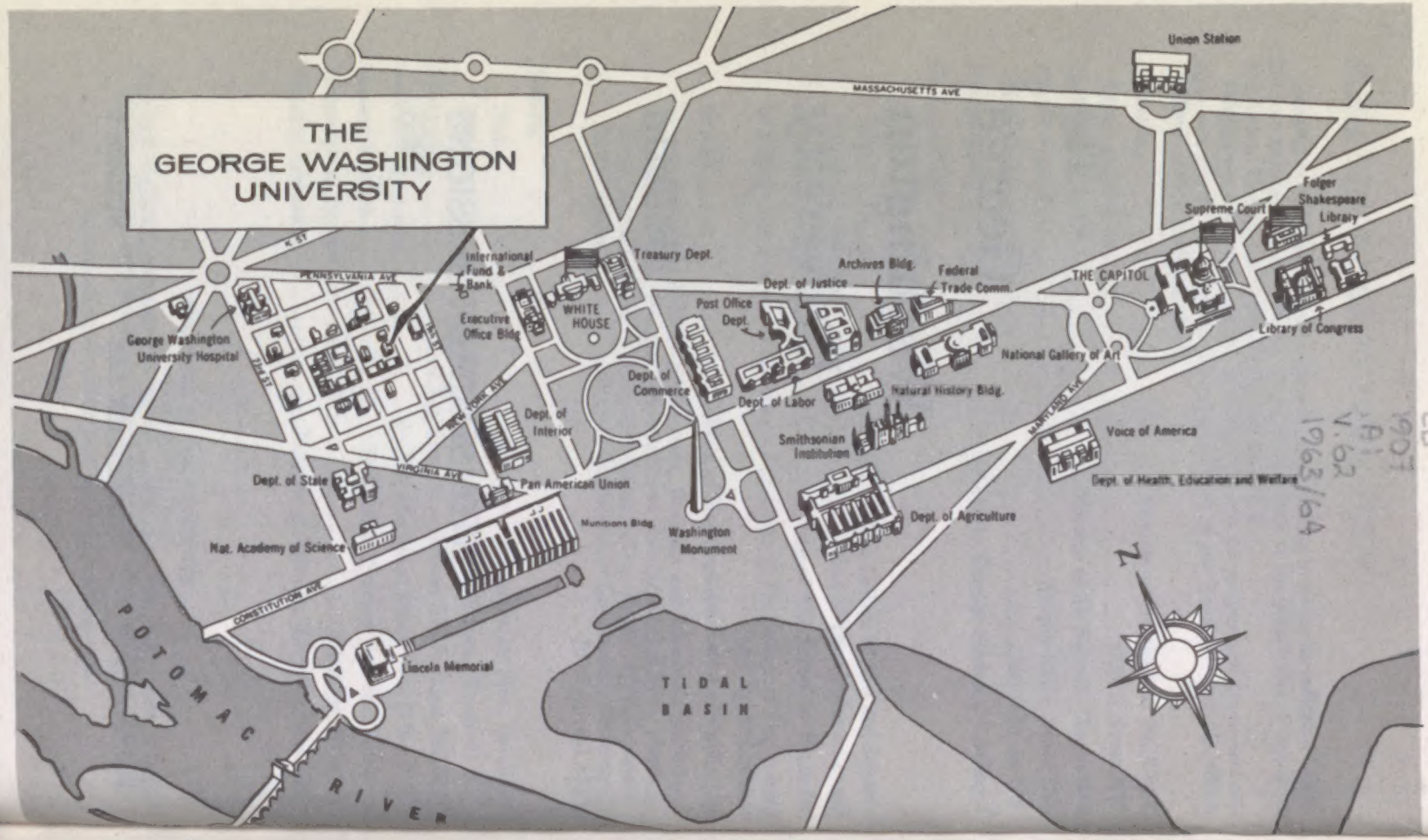
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The George Washington University

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CALENDAR FOR THE 1963 SUMMER SESSIONS

Students expecting to complete, during the Summer Sessions, requirements for degrees to be formally conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Session.

Registration for 8-week term* (10 AM–8 PM)	June 17	Mon.
Classes begin	June 18	Tues.
Independence Day. Holiday	July 4	Thurs.
Eight-week term ends	Aug. 9	Fri.

THE LAW SCHOOL

Registration for all sessions (10 AM–8 PM)	June 10	Mon.
First- and 13-week sessions begin	June 11	Tues.
Independence Day. Holiday	July 4	Thurs.
First-session classes end	July 22	Mon.
First-session examination period	July 23–25	Tues–Thurs.
Registration for students attending 2d session only (10 AM–7 PM)	July 26	Fri.
Second session begins	July 29	Mon.
Labor Day. Holiday	Sept. 2	Mon.
Last day of classes	Sept. 6	Fri.
Second- and 13-week sessions examination period	Sept. 9–11	Mon.–Wed.

THE SCHOOL OF EDUCATION

Nine-week workshop session 1st-block registration, (10 AM–8 PM)	June 17	Mon.
Nine-week workshop session 1st-block classes begin	June 18	Tues.
Independence Day. Holiday	July 4	Thurs.
Nine-week workshop session 2d-block registration†	July 8	Mon.
Six-week session registration†	July 8	Mon.
Nine-week session 2d-block classes begin	July 9	Tues.
Six-week session classes begin	July 9	Tues.
Ed.D and A.M. in Ed. July comprehensive examination applications due	July 10	Wed.
Ed.D. and A.M. in Ed. comprehensive examinations	July 24	Wed.
Nine-week session‡ 3d-block classes begin	July 29	Mon.
Nine-week and 6-week sessions end	Aug. 16	Fri.

Registration for fall semester of academic year 1963–64, Thursday through Saturday morning, September 19–21.

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* For all schools and colleges offering courses in the Summer Sessions except the Law School and the School of Education.

† Registration, 9 A.M.–6 P.M. ‡ Registration, 9 A.M.–5 P.M.

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* Nominated by the alumni.

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THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington. During his public life he urged the establishment of such an institution and in his will he left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

Columbian College in the District of Columbia was chartered by an act of Congress of February 9, 1821. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The George Washington University includes 13 colleges, schools, and divisions. Many of these offer programs of study in the Summer Sessions, as described later in this Bulletin.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. Such accreditation is vital to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering and Applied Science is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for the Accreditation for Teacher Education. The Department of Chemistry is on the approved list of the American Chemical Society.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor; as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

EDUCATIONAL FACILITIES

The University Library.—The University Library contains approximately 371,000 volumes and, with the exception of the Law and medical collections, is housed in the Library Building.

Regulations governing the use of the library, the circulation of books, and the use of reserve books and periodicals are available at the service desks of the Library.

Other Library Facilities in Washington.—The student has access also to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many other great special collections of the government departments.

Research Facilities of Washington.—The arrangement of the summer schedule of classes permits the full-time student to avail himself of the opportunity to study, at first hand, the working of the Federal Government and so to form a background for intelligent and useful citizenship.

In the departmental libraries of the Federal Government are a multitude of reports made by eminent specialists in all fields of science on the results of study and research in the bureaus, experimental stations, laboratories, museums, and observatories of the Nation.

In addition to the governmental collection the student has available the research facilities of such scientific and educational groups, whose headquarters are situated in Washington, as the Carnegie Institution, the American Council on Education, the National Academy of Sciences, the National Research Council, the National Education Association, and the National Geographic Society.

THE SUMMER SESSIONS

The work of the Summer Sessions has been planned to meet the needs of full- and part-time students.

During the summer of 1963, courses are offered in Columbian College of Arts and Sciences; the Law School; the Graduate School of Public Law; the School of Pharmacy; the School of Education; and the School of Government, Business, and International Affairs.

ADMISSION

APPLICATION FOR ADMISSION OR READMISSION

Application for nondegree status in the Division of University Students should be received with any required credentials no later than the Friday preceding the day of registration for the session for which admission is sought (see the Calendar, page 4).

Application for degree candidacy together with all required credentials should be received by May 1 for the Summer Sessions to insure consideration. Late applications will be considered only if the application form and all required credentials are received in the Admissions Office by June 1. Exceptions may be made under extraordinary circumstances, at the discretion of the Director of Admissions.

For admission to the Law School and the Graduate School of Public Law, see pages 19 and 20.

APPLICATION FORMS

Nondegree Status.—For the convenience of those not working toward degrees, a modified form for application for admission is enclosed in this catalogue. This form should be completed and mailed to the Office of the Director of Admissions, with the application fee of $5.

Degree Candidates.—Applicants for admission as degree candidates should request the regular Application for Admission form from the Office of the Director of Admissions. This form should be completed and mailed to the Office of the Director of Admissions, with the application fee of $10.

Readmission.—A student previously registered in this University who did not attend during the semester preceding this registration should complete and return an Application for Readmission form, which is available at the Office of Admissions.

THE STUDENT NOT SEEKING A DEGREE

The student not seeking a degree from this University should apply for admission to the Division of University Students, a nondegree-granting division which makes the work of the University available to the following three types of applicants:

1. The student registered for a degree at another institution is admitted to the extent that facilities permit. No transcript of record is required*.

2. The student over 21 years of age who is not working for a degree in this or another institution may be admitted to take courses for which he has adequate prepara-

tion, as determined by the department concerned. No transcript of record is required*.

3. Secondary school applicants under 21 years of age who have not attended a college or higher institution may be admitted if they meet the entrance requirements of Columbian College of Arts and Sciences (see page 18).

THE STUDENT SEEKING A DEGREE

An applicant from a secondary school must (1) send to his high school principal the high school record form provided by the University, with the request that the completed form be mailed *to the Office of the Director of Admissions:* and (2) request a report of scores on the Scholastic Aptitude Test and the English Composition Achievement Test from the College Entrance Examination Board. Applicants are urged to submit scores on two additional achievement tests in subjects reflecting their major interests.

An applicant who has attended one or more institutions of higher learning must request each registrar to mail to the Office of the Director of Admissions a transcript of his record, even though credits were not earned. An honorable dismissal is required from the institution last attended.

The appropriate report of Graduate Record Examination, when available, should accompany application to graduate degree candidacy.

REGISTRATION

A student may not register for classes until the Office of the Director of Admissions has approved his admission to this University.

A student previously registered in this University who did not attend during the semester preceding this registration must file an application for readmission in advance of registration.

Students expecting to complete, during the Summer Sessions, requirements for degrees to be formally conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Registration for all sessions of the Law School and Graduate School of Public Law summer term will be held June 10. *Summer students planning to take the New York Bar examination must register at this time for both sessions and complete both.* Students wishing to attend the second session only may register on July 26. Tuition fees are payable by the session.

In special instances, with the permission of the instructor, a person who has been admitted to the University may be registered as an auditor in a class without being required to take active part in the exercises or to pass examinations. No academic credit will be allowed for such attendance. A student who takes a course as an auditor may not take the same course later for credit.

CHANGES IN PROGRAM OF STUDY

Changes in programs of study may be made only with the permission of the adviser or major professor and the dean or director of the college, school, or division concerned.

*For admission to the Division of University Students the student must be in good standing and eligible to continue in the institution last attended during the past calendar year. No student is eligible for admission if he has been academically suspended within the past calendar year.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

Tuition Fees

For each semester hour* (except for work taken by a candidate for a Doctor's degree)	$33.00
Doctor of Philosophy†, Doctor of Education‡, or Doctor of Business Administration‡:	
For work leading to and including the general examination	1,100.00
For work leading to and including the final examination	1,100.00
Doctor of Juridical Science, for work leading to and including the final examination	1,100.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are due with the tuition fee for the course. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee, the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

Associate in Arts or Associate in Science	10.00
Bachelor's, Master's and Doctor's degrees	25.00
Advanced Professional Certificate	25.00
Fee for Binding Master's Thesis	6.00
Fee for Printing Summary of Doctoral Dissertation	85.00

Special Fees

Application fee (degree candidate) nonrefundable	10.00
Application fee (nondegree status) nonrefunaable	5.00
Application for Transfer fee, for transfer within the University from one college, school, or division to another, except in cases of normal progression, nonrefundable, payable at the time of application for transfer or readmission	5.00
Admission tests (when required)	6.00–12.00
Late-registration fee, for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
For each examination to qualify for advanced standing and for each special examination	5.00
For English test for foreign students (when required)	5.00
Laboratory check-out fee, for failure to check out of chemistry and pharmacy laboratory by the date deadline set by the instructor	3.00
Transcript fee, for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of the University library; (4)

* Payment of tuition for the Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered "in residence" during this period. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† The tuition fee is to be paid in full at the time of registration or in two years at the rate of $275 a semester. No residence fee will be charged if a third year is needed for completion of either part of the degree requirements.

‡ This fee does not cover the cost of undergraduate courses numbered 1 to 100.

medical attention and hospital services described below. These privileges, with the exception of the issuance of transcripts, cease when the student withdraws or is dismissed from the University.

Medical and Hospital Services.—These services include: (1) three visits in any one illness by a member of the Health Administration Staff, office or residence (District of Columbia), exclusive of a specialist, surgical operation, laboratory, or X-ray examinations; (2) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. All additional hospital charges for operating room, laboratory, anesthetics, X-ray, medications, or any other special services must be paid by the student. Expenses incurred for examination and treatment by specialists, such as eye refraction and provision for glasses; orthopedic examination and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

Hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street, NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each session are due in advance at the time of registration.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Registrations are for the session, and no refunds or rebates are allowed. In no case will tuition be refunded because of nonattendance upon classes.

Payments apply only to the session for which registration charges are incurred, and in no case will these payments be credited to another session or term.

Students in chemistry or pharmacy who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a $3 check-out fee. A student who drops a course before the end of the session must check out of the laboratory at the next regular laboratory period.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

UNIVERSITY REGULATIONS

Students in the Summer Sessions are subject to the University regulations governing students enrolled during the academic year. Degree candidates are referred to the catalogues of the schools in which they are registered. Nondegree students should consult the catalogue of the Division of University Students.

Academic Credit.—The Summer Sessions are an integral part of the University. Academic credit for completed work will be given toward the appropriate degrees in the various colleges and schools of the University in accordance with their separate regulations and requirements.

Residence.—Summer Sessions work may be counted in residence but the candidate for a degree must satisfy the residence requirements of the school or college concerned.

Amount of Work.—No full-time student may take more than 9 semester hours of work during the eight-week session; no employed student, more than 6 hours.

In the Law School and the Graduate School of Public Law the maximum amount of work that may be taken in a session by a full-time student is 6 semester hours; by an employed student, 4 semester hours.

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" office is maintained in the Student Union.

VETERANS EDUCATION

The Office of Veterans Education, Building Q, 2029 H Street NW., a service unit for veterans and war orphans, acts in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this office.

Public Law 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

Public Law 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

Public Law 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within

three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the University Office of Veterans Education at the time of registration.

PUBLIC LAWS 16 AND 894 (VOCATIONAL REHABILITATION)

Disabled veterans desiring vocational rehabilitation under either Law should apply to Veterans Administration for approval of their training objectives at least sixty days prior to registration.

STUDENT LIFE

SOCIAL AND RECREATIONAL PROGRAM OF THE UNIVERSITY

The social and recreational program includes many varied activities and scheduled events. In addition to this campus program a great abundance of cultural as well as social and recreational opportunities are available to persons living in the metropolitan area. During the summer the University posts a weekly guide to all these on a bulletin board in the Student Union.

LIVING ACCOMMODATIONS

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance.

All women students under twenty-one years of age and enrolled for 6 or more hours are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Director of Activities for Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

The following residence halls will be open during the summer of 1963.

Residence Halls for Men

John Quincy Adams Hall: triple rooms—$40 a month, $10 a week

John C. Calhoun Hall: double rooms—$44 a month, $11 a week

Residence Halls for Women

William H. Crawford Hall: double rooms—$48 a month, $12 a week
single rooms—$56 a month, $14 a week

Dolly Madison Hall: double rooms—$48 a month, $12 a week
single rooms—$56 a month, $14 a week

Residence hall payments are due and payable in advance. A student who fails to meet payment is subject to automatic suspension.

Forms for applications, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW. or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business and industrial organizations, government agencies, etc., which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

THE COLLEGES, SCHOOLS, AND DIVISIONS

Information concerning specific requirements for degrees is omitted from this bu letin. For such information, the student is referred to the catalogue of the schoo concerned.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Incoming liberal arts and science freshmen and all transfer students of less tha junior class standing are registered in the lower division of Columbian College o Arts and Sciences. The lower division also provides the first two years of the prelega and premedical programs, the preprofessional work required for admission to th schools of Pharmacy; Education; and Government, Business, and International Af fairs; and two-year terminal curricula in Accounting, Physical Sciences, and Secre tarial Studies. The lower division is primarily concerned with providing (1) th personal and academic guidance needed by beginning college students and (2) th broad cultural foundations in language and literature, science, and social studies o which major field specialization in the upper division is built.

The upper division of Columbian College offers programs leading to Bachelor' degrees in the liberal arts and sciences; the graduate division offers programs lead ing to the Master's degrees.

THE DEGREES

Columbian College offers work leading to the following degrees: Associate in Arts Associate in Science, Bachelor of Arts, Bachelor of Science, Master of Arts, Maste of Science, and Master of Fine Arts. In cooperation with the School of Medicine Columbian College offers work leading to the combined degrees of Bachelor of Ar

and Doctor of Medicine. In cooperation with the Department of Pathology and the University Hospital, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology.

UNDERGRADUATE MAJORS

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

American Thought and Civilization
Anthropology
Art:
  Art History and Theory, Drawing and Painting, Sculpture, Ceramics, or Commercial Art
Biology
Botany
Chemistry
Economics
English Literature
French Language and Literature
Geography
Geology
Germanic Languages and Literatures
History
Journalism
Latin
Latin American Civilization
Mathematical Statistics
Mathematics
Philosophy
Physics
Political Science
Psychology
Religion
Russian
Sociology
Spanish American Literature
Spanish Language and Literature
Speech:
  Speech
  Dramatic Art
Zoology

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

Biology
Botany
Chemistry
Geology
Mathematical Statistics
Mathematics
Physics
Zoology

GRADUATE FIELDS

Graduate work leading to the degree of Master of Arts or Master of Science is offered in the following fields. In addition, programs can be arranged in combined fields subject to the approval of the Committee on Studies.

American Literary and Cultural History
Anatomy
Anthropology
Art History and Criticism
Biochemistry
Biology
Botany
Chemistry
Economics
English and American Literature
English Literature
French Language and Literature
Geography
Geology
Germanic Languages and Literatures
History
Latin American Civilization
Mathematical Statistics
Mathematics
Microbiology
Pharmacology
Philosophy
Physics
Physiology
Political Science
Psychology
Religion
Religious Education
Sociology
Spanish American Literature
Spanish Language and Literature
Speech Correction
Zoology

Graduate work leading to the degree of Master of Fine Arts is offered in the fields of painting and of sculpture and in the field of dramatic art.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business and industrial organizations, government agencies, etc., which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

THE COLLEGES, SCHOOLS, AND DIVISIONS

Information concerning specific requirements for degrees is omitted from this bul letin. For such information, the student is referred to the catalogue of the schoo concerned.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Incoming liberal arts and science freshmen and all transfer students of less tha junior class standing are registered in the lower division of Columbian College o Arts and Sciences. The lower division also provides the first two years of the prelega and premedical programs, the preprofessional work required for admission to th schools of Pharmacy; Education; and Government, Business, and International Af fairs; and two-year terminal curricula in Accounting, Physical Sciences, and Secre tarial Studies. The lower division is primarily concerned with providing (1) th personal and academic guidance needed by beginning college students and (2) th broad cultural foundations in language and literature, science, and social studies o which major field specialization in the upper division is built.

The upper division of Columbian College offers programs leading to Bachelor' degrees in the liberal arts and sciences; the graduate division offers programs lea ing to the Master's degrees.

THE DEGREES

Columbian College offers work leading to the following degrees: Associate in Art Associate in Science, Bachelor of Arts, Bachelor of Science, Master of Arts, Maste of Science, and Master of Fine Arts. In cooperation with the School of Medicin Columbian College offers work leading to the combined degrees of Bachelor of Ar

and Doctor of Medicine. In cooperation with the Department of Pathology and the University Hospital, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology.

UNDERGRADUATE MAJORS

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

American Thought and Civilization
Anthropology
Art:
  Art History and Theory, Drawing and Painting, Sculpture, Ceramics, or Commercial Art
Biology
Botany
Chemistry
Economics
English Literature
French Language and Literature
Geography
Geology
Germanic Languages and Literatures
History
Journalism
Latin
Latin American Civilization
Mathematical Statistics
Mathematics
Philosophy
Physics
Political Science
Psychology
Religion
Russian
Sociology
Spanish American Literature
Spanish Language and Literature
Speech:
  Speech
  Dramatic Art
Zoology

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

Biology
Botany
Chemistry
Geology
Mathematical Statistics
Mathematics
Physics
Zoology

GRADUATE FIELDS

Graduate work leading to the degree of Master of Arts or Master of Science is offered in the following fields. In addition, programs can be arranged in combined fields subject to the approval of the Committee on Studies.

American Literary and Cultural History
Anatomy
Anthropology
Art History and Criticism
Biochemistry
Biology
Botany
Chemistry
Economics
English and American Literature
English Literature
French Language and Literature
Geography
Geology
Germanic Languages and Literatures
History
Latin American Civilization
Mathematical Statistics
Mathematics
Microbiology
Pharmacology
Philosophy
Physics
Physiology
Political Science
Psychology
Religion
Religious Education
Sociology
Spanish American Literature
Spanish Language and Literature
Speech Correction
Zoology

Graduate work leading to the degree of Master of Fine Arts is offered in the fields of painting and of sculpture and in the field of dramatic art.

ENTRANCE REQUIREMENTS*

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units.†

2. Four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social study, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, is prerequisite to courses in mathematics and physics.

3. The principal's statement that the applicant is prepared to undertake college work.

4. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test. Applicants are urged to submit scores on two additional achievement tests in subjects reflecting their major interests.

The Committee on Admission and Advanced Standing will consider the adequacy of the qualifications of an applicant who, because of unusual circumstances, does not present all the formal requirements stated above. The Committee may prescribe appropriate tests.

The applicant is responsible for

a. Sending the report form obtained from the Admissions Office to his principal who will complete the form and forward it directly to the Director of Admissions.

b. Requesting a report of scores on the Scholastic Aptitude Test and the achievement tests to be sent to the Director of Admissions by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. Write directly to the Board for information as to testing dates, fees, and center locations.

For the Master's Degrees.—An approved Bachelor's degree from an accredited higher institution; an appropriate distribution of courses; and a superior quality of work in the major field.

THE GRADUATE COUNCIL

The Graduate Council offers work leading only to the degree of Doctor of Philosophy. There is no specified amount of graduate work required for this degree beyond the first full year of graduate study. However, each student may be assigned whatever additional graduate course work his committee deems essential to his doctoral program. A limited amount of this graduate work is offered by some departments in the Summer Sessions. A student wishing to work under the disciplines of the Graduate Council will consult the Dean of the Graduate Council for information concerning credentials and candidacy.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request by the Office of the Graduate Council.

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* Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

THE NATIONAL LAW CENTER

The Law School offers work leading to the degree of Bachelor of Laws; the Graduate School of Public Law offers work leading to the degrees of Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The Law School and the Graduate School of Public Law Application form contains an instruction sheet stating the credentials which are required.

See "Registration", on page 11 for provisions applicable to students who plan to take the New York Bar examination.

ENTRANCE REQUIREMENTS

Unclassified Students.—A degree candidate with an above average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student to earn credits for transfer to the other law school. Transfer students must previously have completed at least one year of law school work.

A member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools or a law school approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at the Law School or the Graduate School of Public Law.

For the Degree of Bachelor of Laws.—Students from other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association may apply for transfer to this Law School with advanced standing. *No new students are admitted as candidates for the degree of Bachelor of Laws in the summer term.*

For the Degree of Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university* and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools or a law school approved by the American Bar Association are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alterna-

For the Degree of Master of Comparative Law.—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycée, or lyceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

For the Degree of Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university* and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools or a law school approved by the American Bar Association and outstanding capacity for scholarly work in the field of law.

Continuing Legal Education Students.—A simplified admission and registration

* The Dean of the Graduate School of Public Law is authorized to make exceptions in appropriate cases.

procedure is used for members of the bar who wish to take courses on a noncredit basis.

THE SCHOOL OF PHARMACY

The School of Pharmacy offers work leading to the degree of Bachelor of Science in Pharmacy.

ENTRANCE REQUIREMENTS

The satisfactory completion of the pre-Pharmacy curriculum in the lower division of Columbian College of Arts and Sciences, or the equivalent, is required.

THE SCHOOL OF EDUCATION

The School of Education prepares teachers, counselors, and administrators for the higher ranges of educational service and offers opportunities to teachers of experience to extend their education. The schedule of courses is arranged to meet the needs of employed students as well as those able to devote full time to their studies. It offers both graduate and undergraduate work.

THE DEGREES

The School of Education offers work leading to the following degrees: Bachelor of Arts in Education, Bachelor of Science in Physical Education, Master of Arts in Education, and Doctor of Education.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees.—The satisfactory completion of two years of approved college work, or graduation from an approved two-year normal school, or the equivalent, is required.

For the Master's Degree.—A Bachelor's degree from an accredited college, or the equivalent, and the approval of the Committee on Admission and Advanced Standing are required.

For the Advanced Professional Certificate.—The Bachelor of Arts degree in Education or the Bachelor of Science degree in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree, from an accredited institution of higher learning, at least two years of successful teaching experience, and a permanent teaching or administrative license are required.

For the Doctor's Degree.—A Master's degree from an accredited college, or the equivalent, and the approval of the Faculty of the School of Education are required.

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

THE DEGREES

The School of Government, Business, and International Affairs offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in International Affairs or Public Affairs; (2) Bachelor of Business Administration with a major in Accounting, Business Administration, or Business and Economic Statistics; (3) Master of Arts in Government with a major field in International Affairs, Pub-

Affairs, Economic Policy, Public Administration, or Personnel Administration; (4) Master of Business Administration with a major field in Accounting, Business and Economic Statistics, Business Administration, Hospital Administration, Nursing Home Administration, or Personnel Administration; and (5) Doctor of Business Administration.

The Master's degrees are based on completion of prescribed course work, the comprehensive examination, and thesis. The minimum Master's program is 30 semester hours of which 6 represent the thesis. At least 30 hours must be completed at this University. Applicants whose undergraduate training does not include background courses necessary before taking the comprehensive examination must undertake programs longer than the 30-hour minimum.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees

Bachelor of Arts in Government.—The satisfactory completion of the *International Affairs* or *Public Affairs* curriculum in the lower division of Columbian College of Arts and Sciences, or the equivalent, is required.

Bachelor of Business Administration.—The satisfactory completion of the *Accounting, Business Administration,* or *Business and Economic Statistics* curriculum in the lower division of Columbian College of Arts and Sciences, or the equivalent, is required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but may be required to take work above the minimum requirements.

Students admitted to candidacy must have attained a quality-point index of 3.00 (*B* average) in the undergraduate major.

Master of Arts in Government

In the field of International Affairs or *Public Affairs.*—The applicant's undergraduate program must have included background courses corresponding to an undergraduate major at this University.

In the field of Public Administration.—An undergraduate major in a social science or equivalent work experience.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

In the field of Economic Policy.—An undergraduate major in economics at this University, or the equivalent.

Master of Business Administration

In the field of Accounting or *Business and Economic Statistics.*—The applicant's undergraduate program must have included background courses corresponding to an undergraduate major at this University.

In the field of Business Administration.—Students with undergraduate majors in economics or business administration may be able to complete the program in a minimum of 30 hours. Applicants who lack necessary undergraduate background are required to make up deficiencies over and above the normal Master of Business Administration program. Those with backgrounds in fields other than economics or

business administration must expect programs longer than the minimum 30 hours. In the program in automatic data processing appropriate courses in mathematics are required.

In the field of Hospital Administration or *Nursing Home Administration.*—A 3.00 average in the undergraduate major is generally required. However, in the selection of candidates, consideration is given to personal qualifications, aptitude for hospital or nursing home administration, and practical experience.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

FOR THE DOCTOR'S DEGREE

Doctor of Business Administration.—A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in statistics and accounting to the satisfaction of the Committee on Doctoral Studies are required.

THE COLLEGE OF GENERAL STUDIES

The College of General Studies supplements the adult education program of the University through its Campus Division, Off-Campus Division, and Division of Community Services. Programs leading to the following degrees are offered for mature students whose background and experience entitle them to registration in a college designed to meet individual needs: Associate in Arts; Associate in Science; Associate in Secretarial Administration; Bachelor of Arts; Bachelor of Business Administration; Bachelor of Science in Cartography; Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration; Master of Arts in International Affairs; Master of Business Administration; and Master of Public Administration.

ENTRANCE REQUIREMENTS

Off-Campus Credit Courses.—A simplified procedure is used for admission and registration in off-campus courses. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications would indicate that they are able to carry the course successfully. Admission to an off-campus course does not constitute admission to degree candidacy in the University.

Noncredit Courses.—In general, noncredit courses will be open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

The separate catalogue of the College of General Studies, available at the College, 706 Twentieth Street NW., Washington 6, D. C., contains full information concerning programs, courses, entrance and degree requirements, and fees.

THE DIVISION OF UNIVERSITY STUDENTS

The Division of University Students makes the work of the University, in its several colleges and schools, accessible to three types of students who are not working toward a degree in this University (see pages 10 and 11).

COURSES OF INSTRUCTION

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for the student in the freshman or sophomore year. With the approval of the adviser and the dean, they may also be taken by a junior or senior. In certain instances, they may be taken by a graduate student to make up undergraduate deficiencies or as prerequisites to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for the student in the junior or senior year. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for the graduate student. They are open, with the approval of the officer of instruction, to the qualified senior; they are not open to the freshman or sophomore student.

In the National Law Center, first-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses from 301 to 400; and graduate courses, from 401 to 500.

INDICATIONS OF THE AMOUNT OF CREDIT

The number of hours of credit given for the satisfactory completion of a course is in most cases indicated in parentheses after the name of the course.

The Schedule of Classes for the Summer Sessions, which will be available in April at the Office of the Registrar, will contain information about room assignments and instructors for courses.

The University reserves the right to change or withdraw any of the courses of instruction listed.

ACCOUNTING

Introductory Accounting (3)

Basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. MTW ThF 8:10–9:00 A.M.

-2 *Introductory Accounting* (3–3)

First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. Accounting 2 begins July 15. MTWThF 7:10–9:00 P.M.

101 *Cost Accounting* (3)
Theory and purposes of industrial cost accounting, treatment of systems of cost control and determination, analysis and interpretation of cost data. Prerequisite: Accounting 1–2. MTTh 5:35–7:00 P.M.

111 *Financial Statement Analysis* (3)
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor. MTWTh 7:00–8:05 A.M.

115 *Survey of Accounting* (3)
Accounting for single proprietorships and corporations with emphasis on the use of accounting information in the management process; study of theory, terminology, and the analysis and interpretation of accounting data. Not open for credit to Accounting or Business Administration majors. MW 6:10–8:40 P.M.

132 *Accounting Theory* (3)
Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. MTTh 5:35–7:00 P.M.

191 *Advanced Accounting* (3)
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. MTTh 7:10–8:35 P.M.

193 *Business Budgeting* (3)
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2. MTTh 11:10 A.M.–12:35 P.M.

212 *Managerial Accounting* (3)
A survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite: Accounting 211 or permission of the instructor. MTh 7:10–9:15 P.M.

299–300 *Thesis* (3–3)

Course Offered in Special Program

In addition to the regular courses announced above, the University offers the following accounting course for students enrolled in the Navy Graduate Financial Management Program.

3 *General Accounting* (3)
Study of accounting systems used by single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data.

ART

ART HISTORY AND THEORY

1 *Art Appreciation* (3)
A study of the language and function of art in its various media, the development of styles, aesthetic principles, theories, and the ideas in art through the ages. (Primarily for nonmajors.) MTWThF 6:10–7:00 P.M.

71 *Introduction to the Arts in America* (3)
From the Colonial beginnings to the Republican Age. MTWTh 8:55–10:00 A.M.

72 *Introduction to the Arts in America* (3)
Painting, sculpture, architecture, and the popular arts during the 19th and 20th centuries. MTWTh 11:10 A.M.–12:15 P.M.

103 *Medieval Art* (3) (Formerly Art 102)
A study of architecture, sculpture, and painting from the formative states of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. MTWTh 1:10–2:15 P.M.

143 *Folk Arts in America* (3)
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected reference to American folk music. MTWTh 2:25–3:30 P.M.

248 *Studies in Classical Art* (3)
MW 7:10–9:25 P.M.

289–90 *Thesis* (3–3)

DRAWING, PAINTING, AND CERAMICS*

21 *Design and Composition* (3)
An investigation of the fundamentals of two- and three-dimensional design. MTWThF 9:00–12:00 A.M.

41 *Drawing and Perspective* (3)
An introductory course in object and figure drawing and mechanical perspective. MTWThF 9:00–12:00 A.M.

51 *Ceramics I* (3)
Basic techniques in clay preparation, wheel throwing, and hand forming. MTWThF 9:00–12:00 A.M.

52 *Ceramics I* (3)
Continuation of Art 51. MTWThF 9:00–12:00 A.M.

65 *Drawing and Painting I—Life, Still Life, and Portrait* (3)
MTWThF 9:00–12:00 A.M.

127 *Drawing and Painting II—Life and Portrait*† (3)
MTWThF 9:00–12:00 A.M.

131 *Ceramics II*† (3)
Techniques in clay and glaze formulation, advanced wheel throwing and hand forming, mosaics. MTWThF 9:00–12:00 A.M.

132 *Ceramics II*† (3)
Continuation of Art 131. MTWThF 9:00–12:00 A.M.

175 *Advanced Composition* (3)
Advanced problems in creative design and composition; development of representational skills. MTWThF 9:00–12:00 A.M.

265 *Painting III*† (3.
MTWThF 9:00–12:00 A.M.

275 *Painting IV*† (3)
MTWThF 9:00–12:00 A.M.

299–300 *Thesis* (3–3)

MUSIC

4 *Music Appreciation* (3)
General study of musical forms, structures, and textures, including listening analysis. MTWTh 1:10–2:15 P.M.

* Art 21–22 is prerequisite to all other studio courses. Classes in the practice of art are held at the Corcoran School of Art.
† May be taken for 6 semester hours with the approval of the instructor.

11 *Piano* (1)
Individual lessons. Studio fee, $35. Hours to be arranged.

13 *Voice* (1)
Individual lessons. Studio fee, $35. Hours to be arranged.

15 *Organ* (1)
Individual lessons. Studio fee, $35. Hours to be arranged.

17 *Orchestral Instrument* (1)
Individual lessons. Studio fee, $35. Hours to be arranged.

104 *History of Music* (3)
The development of music in the Western World from the Baroque Era to the 20th century. MTWTh 3:45–4:50 P.M.

BOTANY

BIOLOGY*

1–2 *Introductory Biology** † (4–4)
Biology 1—*Plant Sciences* (4)—section B: June 18 to July 17, MTWThF 6:10–10:00 P.M.; section A: July 18 to August 19, MTWThF 1:10–5:00 P.M.
Biology 2—*Animal Sciences* (4)—section A: June 18 to July 17, MTWThF 1:10–5:00 P.M.; section B: July 18 to August 19, MTWThF 6:10–10:00 P.M.
This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence: students may start the course with either Biology 1 or Biology 2. Material fee, $10 for each half.

BOTANY*

105 *Field Botany* (3)
A course primarily for nonspecialists, emphasizing local flora. Prerequisite: Biology 1, or permission of the instructor. TTh 6:10–9:00 P.M.; field trip—to be arranged.

140 *Cell Physiology*† (3)
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. MWF 6:10–7:35 P.M.

295 *Research* (arr.)
Hours, credits, and fees to be arranged.

299–300 *Thesis* (3–3)

BUSINESS AND PUBLIC ADMINISTRATION

BUSINESS AND PUBLIC ADMINISTRATION

201 *Advanced Administrative Management* (3)
(Replaces Business Administration 201 and Public Administration 210)
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. TTh 6:10–8:00 P.M.

207A *Human Relations in Administration* (3)
(Replaces Business Administration 275, and Public Administration 241)
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. MW 6:10–8:00 P.M.

* Biology 1–2 is prerequisite to all courses in Botany, except by permission of the instructor.
† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following business and public administration courses for students enrolled in special programs.

207B *Human Relations in Administration* (3)
For students in the Navy Graduate Financial Management program only.

268 *Management Engineering* (3)
For students in the Air Force Advanced Management program only. Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs.

BUSINESS ADMINISTRATION

102 *Fundamentals of Management* (3)
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. MTWThF 8:10–9:00 A.M.

105 *Personnel Management* (3)
Industrial personnel and manpower programs, organization and policy in personnel activities. TTh 5:30–8:00 P.M.

131 *Business Finance* (3)
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. MW 5:30–8:00 P.M.

141 *Principles of Marketing* (3)
An introduction to marketing structure and its relation to the total economy, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies. Prerequisite: Economics 1–2. TTh 1:10–3:40 P.M.

241 *Seminar in Marketing* (3)
An advanced course in marketing, emphasizing special and current problems in the field. MW 8:10–10:00 P.M.

294 *Business Research* (3)
TTh 8:10–10:00 P.M.

299 *Thesis* (3)
TTh 6:10–8:00 P.M.

300 *Thesis* (3)
Hours to be arranged.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in special programs.

107 *Labor-Management Contracts* (3)
For students in the Air Force Advanced Management program only. Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations.

269 *Readings and Conferences in Controllership* (3)
For students in the Navy Graduate Financial Management program only.

HOSPITAL ADMINISTRATION

285–86 *Readings in Medical Care Administration* (3–3)
Advanced studies in various aspects of hospital, nursing home, and other medical care administration and management. Admission by permission of the Coordinator.

293 *Hospital Residency I* (3)
The twelve-month residency, beginning June 1 or July 1 of each year, has four major objectives: work experience under a qualified preceptor; periodic seminars with University staff; periodic written progress reports of work accomplished; and a final written report of a major investigation.

296 *Hospital Residency II* (3)
For selected students who take a second year of residency.

PUBLIC ADMINISTRATION

211 *Problems of Governmental Organization* (3)
Theories and principles of organization; analysis of problem areas in administration, such as decentralization, staff-line, field-headquarters, and executive-legislative relationships. TTh 6:10–8:00 P.M.

232A *Federal Personnel Procedures* (3)
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. TTh 8:10–10:00 P.M.

251A *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration. MW 6:10–8:00 P.M.

271 *Reading and Conference Course in Public Management and Administration* (3)
The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration. MW 8:10–10:00 P.M.

299 *Thesis* (3)
TTh 6:10–8:00 P.M.

300 *Thesis* (3)
Hours to be arranged.

Courses Offered in Special Program

In addition to the regular courses announced above, the University offers the following public administration courses for students enrolled in the Air Force Advanced Management Program.

213 *Administration in Government* (3)
Selected topics in problems of federal administration, with particular attention to the role of Congress and the public in the administrative processes.

232B *Federal Personnel Procedure* (3)
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration.

251B *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration.

CHEMISTRY

11–12 *General Chemistry** (4–4)
Elementary course in general chemistry. Prerequisite: one year of high school algebra. Students with credit for one semester of general chemistry (college level) may enter

* Full-year course; credit is not given until the second half of course is completed.

Chemistry 12 on July 18. Laboratory fee, $18 for each half. Nine-week term ends August 19. MTWThF 8:30 A.M.–1:20 P.M.

21 *Qualitative Inorganic Analysis* (4)
Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, $18. Eight-week term. TWThF 1:10–5:00 P.M.

22 *Quantitative Inorganic Analysis I* (4)
Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18. Eight-week term. TW ThF 1:10–5:00 P.M.

151–52 *Organic Chemistry** (4–4)
Chemistry of the compounds of carbon. Prerequisite†: Chemistry 21. Chemistry 151 laboratory fee, $12; Chemistry 152 laboratory fee, $20. Students who have credit for Chemistry 151 may enter Chemistry 152 on July 18. Nine-week term ends August 19. MTWThF 8:30 A.M.–1:20 P.M.

295–96 *Research* (arr.)
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour. Hours and credits to be arranged.

299–300 *Thesis* (3–3)
Laboratory fee, $18 each half. Hours to be arranged.

ECONOMICS‡

1 *Principles of Economics*‡ (3)
Survey of the major economic principles, institutions, and problems in contemporary life. MTWThF 9:10–10:00 A.M. or MTWTh 5:55–7:00 P.M.

2 *Principles of Economics* (3)
Continuation of Economics 1. Prerequisite: Economics 1. MTWTh 11:10 A.M.–12:15 P.M. or MTWTh 7:10–8:15 P.M.

101 *Economic Analysis* (3)
Analysis of demand, supply, and commodity pricing; theory of national income determination; pricing of productive services; welfare economics. MTWTh 7:55–9:00 A.M.

121 *Money and Banking* (3)
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. MTWTh 12:25–1:30 P.M.

181 *International Economics* (3)
Survey of world economics, theories of international trade, analysis of international economic problems, and the international organizations. MTWTh 5:55–7:00 P.M.

219 *Managerial Economics* (3)
Analysis of price, production, and inventory policies of business firms. MW 6:10–8:00 P.M.

251 *Theories of Economic Development* (3)
Growth and change in economic activity, capital accumulation, innovations in technology and business organization. TTh 8:10–10:00 P.M.

299–300 *Thesis* (3–3)

EDUCATION (*See* pages 46–50)

* Full-year course; credit is not given until the second half of course is completed.
† This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 within the past two years.
‡ Economics 1–2 is prerequisite to all other courses in Economics.

ENGLISH*

ENGLISH COMPOSITION

A *English for Foreign Students* (3)
A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. MTWTh 7:10–8:15 P.M.

1 *English Composition** (3)
Review of grammar, exercises in composition, readings. MTWThF 6:10–7:00 P.M.

1X *English Composition** (3)
An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets for a period and a half five times a week and carries 3 semester hours of credit. The tuition fee is $124 (the regular fee of $33 a semester hour, plus an additional fee of $25). MTWThF 6:10–7:40 P.M.

2 *English Composition** (3)
For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X. MTWThF 11:10–12:00 A.M.

4 *English Composition** (3)
The second half of the six-hour English Composition course required of students in Columbian College of Arts and Sciences sequence. A course in critical analysis and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X and both semesters of one of the introductory literature courses. MTWThF 10:10–11:00 A.M.

ENGLISH LITERATURE†

51 *Introduction to English Literature* (3)
A historical survey, from beginnings to 1800. MTWTh 8:55–10:00 A.M. or MTWTh 7:10–8:15 P.M.

52 *Introduction to English Literature* (3)
A historical survey, literature since 1800. MTWThF 10:10–11:00 A.M.

135 *Shakespeare* (3)
The histories and comedies. MTWThF 10:10–11:00 A.M.

139 *The Seventeenth Century* (3)
Poetry and prose from 1603 to 1660. MTWThF 9:10–10:00 A.M.

183 *The English Drama* (3)
Concerned principally with the drama of Shakespeare's contemporaries. MTWTh 5:55–7:00 P.M.

192 *Medieval Legend and Saga* (3)
Celtic and Norse. MTWTh 1:10–2:15 P.M.

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College of Arts and Sciences (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students *not* required to follow the Columbian College of Arts and Sciences sequence.

† English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 125.

236 *Studies in Shakespeare and His Contemporaries* (3)
Prerequisite: English 135–36 or the equivalent. Open to undergraduates with permission of the instructor. TTh 7:10–9:00 P.M.

AMERICAN LITERATURE*

71 *Introduction to American Literature* (3)
A historical survey, from beginnings to 1860. MTWTh 11:10 A.M.–12:15 P.M. or MTWTh 5:55–7:00 P.M.

72 *Introduction to American Literature* (3)
A historical survey, literature since 1860. MTWTh 7:10–8:15 P.M.

174 *Major American Poets* (3)
The 20th century. MTWTh 7:10–8:15 P.M.

176 *American Drama* (3)
Critical study of 20th century drama. MTWTh 11:10 A.M.–12:15 P.M.

FRENCH

(*See* Romance Languages and Literatures, page 39)

GEOGRAPHY

51 *Introduction to Geography* (3)
A study of place attributes and characteristics; patterns and associations of physical and cultural earth features. MTWThF 2:10–3:00 P.M.

52 *World Regions* (3)
The analysis of world regional divisions, descriptions and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. MTWThF 3:10–4:00 P.M.

175 *City Planning: Survey and Design* (3)
Preparation of proposals for urban development. Lecture and field trips. T 5:00–6:00 P.M.; S 9:00–12:00 A.M.

185 *Africa* (3)
Regional survey. No prerequisites. MTW 5:35–7:00 P.M.

GEOLOGY

1–2 *Introductory Geology* (3–3)
A survey course covering the principles of geology. *First half:* physical geology—materials of the earth's crust, geologic processes. *Second half:* historical geology—geological periods, evolution of life on earth. Laboratory fee, $6 each half. Geology 1 is not prerequisite to Geology 2. Geology 2 begins July 18 and ends August 19. Lectures, laboratories, and field trips—MTWThF 9:10 A.M.–1:00 P.M.

GERMANIC LANGUAGES AND LITERATURES†

1–2 *First-year German* (3–3)
Full-year course: credit is not given for German 1 until German 2 is completed. The essentials of German grammar, translation of easy prose. Aural training, oral practice

* English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 171–72.
† A standardized placement examination administered at registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination assignment is made to the appropriate course, with credit assigned on the usual basis.

in electronic language workshop. Workshop fee, $6 each half.* Second half begins July 15. Lecture MTWThF 9:10–11:00 A.M. or MTWThF 6:10–8:00 P.M.; workshop —to be arranged.

3–4 *Second-year German* (3–3)
Full-year course: credit is not given for German 3 until German 4 is completed. Selections from modern German prose; review of grammar. Aural training, oral practice in electronic language workshop. Workshop fee, $6 each half.† Prerequisite: German 1–2 or two years of high school German. Second half begins July 15. Lecture MTWThF 9:10–11:00 A.M. or MWF 6:10–8:00 P.M. and TTh 7:10–9:00 P.M.; workshop—to be arranged.

47 *Beginning German for Reading Examination Candidates* (0)
This course carries no credit. Tuition fee, $99 for all students except doctoral candidates. MTWTh 5:55–7:00 P.M.

49 *German Readings for Nonmajor Students* (3)
Primarily for students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or German 47. MTWTh 7:10–8:15 P.M.

HISTORY†

39 *The Development of European Civilization* (3)
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from ancient times to 1715. MTWThF 9:10–10:00 A.M.

40 *The Development of European Civilization* (3)
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from 1715 to the present. MTWTh 11:10 A.M.–12:15 P.M. or MTWTh 5:55–7:00 P.M.

71 *The Development of the Civilization of the United States* (3)
Primarily for sophomores. The political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. MTWTh 7:55–9:00 A.M.

72 *The Development of the Civilization of the United States* (3)
Primarily for sophomores. The political, social, economic, and cultural forces of the United States in their world setting from 1865 to the present. MTWThF 9:10–10:00 A.M. or MTWTh 5:55–7:00 P.M.

130 *Nationalism* (3)
The historical evolution of modern Nationalism. MTWThF 8:00–8:50 A.M.

145 *History of Russia* (3)
The course of Russian empire, 860–1881. MTWThF 9:10–10:00 A.M.

146 *History of Russia* (3)
Revolution and Soviet rule, 1881–1960. MTWTh 11:10 A.M.–12:15 P.M.

152 *English History* (3)
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world since 1689. MTWThF 10:10–11:00 A.M.

166 *Mexico and the Caribbean since Independence* (3)
A survey of the republics of Mexico, Central America, and the Caribbean islands. MTWTh 5:55–7:00 P.M.

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* Students registering for German 1–2 or 3–4 must register for one lecture section and one workshop section for each half of the course. Change in workshop section requires a regular drop-add slip from the Department.

† History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 171 through 184; either History 39–40 or 71–72, to courses 161 through 166.

171 *Social History of the United States* (3)
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861. MTWThF 10:10–11:00 A.M.

173 *Representative Americans* (3)
A biographial approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. MTWThF 9:10–10:00 A.M.

176 *Political and Constitutional History of the United States* (3)
The Civil War to 1940. MTWTh 11:10 A.M.–12:15 P.M.

182 *Diplomatic History of the United States since 1898* (3)
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. MTWThF 8:00–8:50 A.M.

261 *Seminar in Latin American History* (3)
MW 8:20–10:10 P.M.

291 *Seminar* (3)
Prerequisite: approval of the Department. Hours to be arranged.

299–300 *Thesis* (3–3)
Required of all candidates for the Master's degree specializing in history. Hours to be arranged.

JOURNALISM

111 *Reporting* (3)
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. Hours to be arranged.

115 *Editing and Make-up* (3)
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. Hours to be arranged.

Course Offered in Six-Week Education Session

July 8 to August 16

190 *Supervising School Publications* (3)
The role of journalism in society and the secondary school. Basic news writing, copy editing, make-up, and law of the press. Editorial, business, and mechanical aspects of scholastic newspaper, magazine, and yearbook publication. MW 6:40–9:00 P.M.; two conference hours to be arranged.

Law (*See* pages 44–46)

MATHEMATICS*

3 *College Algebra* (3)
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. MTWThF 10:10–11:00 A.M. or MTWTh 5:55–7:00 P.M.

* No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

6 *Plane Trigonometry* (3)
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). MTWThF 9:10–10:00 A.M. or MTWTh 7:10–8:15 P.M.

9 *General Mathematics* (3)
For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. MTWThF 9:10–10:00 A.M. or MTWTh 7:10–8:15 P.M.

10 *General Mathematics II* (3)
An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. MTWTh 5:55–7:00 P.M.

21 *Calculus I* (3)
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. MTWThF 11:10–12:00 A.M. or MTWTh 5:55–7:00 P.M.

22 *Calculus II* (3)
Differentiation and integration of transcendental functions and applications; conics; parametric equations; techniques of integration. Prerequisite: Mathematics 21. MTWThF 10:10–11:00 A.M. or MTWTh 7:10–8:15 P.M.

23 *Calculus III* (3)
Vector concepts; improper integrals; solid geometry; partial differentiation and applications. Prerequisite: Mathematics 22. MTWThF 9:10–10:00 A.M. or MTWTh 5:55–7:00 P.M.

24 *Calculus IV** (3)
Multiple integration with application; infinite series; differential equations. Prerequisite: Mathematics 23. MTWThF 10:10–11:00 A.M. or MTWTh 7:10–8:15 P.M.

111 *Mathematics for Engineers and Physicists I* (3)
Differential equations, vector analysis, introduction to matrix algebra. Prerequisite: Mathematics 24 or former 31. MTWTh 5:55–7:00 P.M.

112 *Mathematics for Engineers and Physicists II* (3)
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or 132. MTWThF 11:10–12:00 A.M.

124 *Introduction to Matrix Theory* (3)
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. MTWThF 11:10–12:00 A.M.

139 *Advanced Calculus I* (3)
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. MTWTh 7:10–8:15 P.M.

255 *Differential Geometry* (3)
MTWTh 5:55–7:00 P.M.

295–96 *Reading and Research* (3–3)
Hours to be arranged.

299–300 *Thesis* (3–3)

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* Mathematics 24 or former 31 is prerequisite to all second-group courses.

MUSIC

(*See* Art, pages 25 and 26)

PHARMACY

192 ***Hospital Pharmacy: Prescription Practice*** (1)
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102. Laboratory—hours to be arranged.

PHILOSOPHY

51 ***Introduction to Philosophy*** (3)
A critical examination of some of the problems of modern philosophy in relation to scientific and social developments since the Renaissance. TWTh 7:10–8:35 P.M.

111 ***History of Philosophy*** (3)
Philosophy in Greek and Roman times. MTWTh 5:55–7:00 P.M.

121 ***Logic and Scientific Method*** (3)
The elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. MTWTh 7:35–8:40 A.M.

PHYSICS

11 ***Introductory Physics*** (3)
An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. *First half* of nine-week term—ends July 17. Lecture and laboratory—MWF 1:10–4:30 P.M.; recitation—TTh 1:10–3:00 P.M.

12 ***Introductory Physics*** (3)
Mechanics, wave-motion, and sound. Prerequisite: Physics 11 (or former Physics 5). Material fee, $11. *Second half* of nine-week term—July 18–August 19. Lecture and laboratory—MWF 1:10–4:30 P.M.; recitation—TTh 1:10–3:00 P.M.

13 ***Introductory Physics*** (3)
Elementary electricity and magnetism. Prerequisite: Physics 11. Students who have completed trigonometry may take this course concurrently with Physics 11. Material fee, $11. Lecture—TTh 6:10–7:00 P.M.; recitation and laboratory—MW 6:10–9:30 P.M.

POLITICAL SCIENCE*

1 ***Introduction to Government**** (3)
Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. MTWThF 10:10–11:00 A.M.

9 ***Government of the United States**** (3)
The structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. MTWThF 11:10–12:00 A.M. or MTWTh 7:10–8:15 P.M.

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

107 *Problems in Modern Political Thought* (3)
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. MTWTh 7:10–8:15 P.M.

111 *Introduction to Comparative Government and Politics* (3)
Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. MTWThF 9:10–10:00 A.M.

121 *The Constitution of the United States* (3)
Judicial power of federal courts in constitutional interpretation. Emphasis on separation of powers, federal-state relationships, and taxation. MTWTh 5:55–7:00 P.M.

145 *Political Parties and Politics* (3)
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. MTWThF 10:10–11:00 A.M.

171 *International Politics* (3)
Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. MTWTh 5:55–7:00 P.M.

172 *International Organization: the United Nations* (3)
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. MTWThF 11:10–12:00 A.M.

177 *Recent Trends in Latin American Politics and Government* (3)
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. MTWTh 7:10–8:15 P.M.

181 *International Law* (3)
Survey of the public law of nations with particular emphasis on the law of peace. MTWThF 10:10–11:00 A.M.

213 *Readings in Comparative Government and Politics* (3)
Readings and group discussions on comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. TTh 8:10–10:00 P.M.

279 *Reading Course in International Affairs* (3)
Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. TTh 8:10–10:00 P.M.

281 *Seminar: International Law and Relations* (3)
Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. MW 8:10–10:00 P.M.

299–300 *Thesis* (3–3)

PSYCHOLOGY*

1 *General Psychology** (3)
The fundamental principles underlying human behavior. MWTh 8:35–10:00 A.M. or MWTh 5:35–7:00 P.M.

4 *Psychology of Adjustment* (3)
Processes involved in the total adjustment of the individual, with emphasis on social environment; development in the individual of adjustment techniques. MWTh 5:35–7:00 P.M.

* Psychology 1 is prerequisite to all other courses in Psychology. Six credits in courses from 1 to 100 are prerequisite to all courses from 101–200.

29 *Child Psychology* (3)
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. MWTh 11:10 A.M.–12:35 P.M.

101 *Abnormal Psychology* (3)
The causes, diagnosis, treatment, and prevention of the various types of maladjustment and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. MWTh 8:35–10:00 A.M.

118 *Physiological Psychology* (3)
Structure, function, and phylogeny of receptors, nervous system, and effectors as mediators of behavior, including drives, learning, and emotions. MWTh 11:10 A.M.–12:35 P.M.

129 *Introduction to Counseling* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. MWTh 7:10–8:35 P.M.

131 *Psychological Tests* (3)
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. MWTh 1:10–2:35 P.M.

151 *Social Psychology* (3)
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war. MWTh 5:35–7:00 P.M.

156 *Psychology of Propaganda and Public Opinion* (3)
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. MWTh 7:10–8:35 P.M.

193–94 *Readings in Psychology* (3–3)
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality-point index of 3.00 or higher. Permission of staff member under whom course is to be taken is necessary. Hours to be arranged.

196 *History and Systems of Psychology* (3)
A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology. MWTh 7:10–8:35 P.M.

201 *Seminar: Advanced General Psychology* (3)
General review of the field for graduate students with an intensive study of selected problems. Required in all graduate programs. MW 1:10–3:00 P.M.

202 *Psychological Research Methods and Procedures* (3)
Required of all Master's candidates in psychology. Prerequisite: Experimental Psychology and an elementary course in statistics. TTh 7:10–9:00 P.M.

207–8 *Readings in Psychology for Graduate Students* (3–3)
Supervised readings with conferences on specified topics in psychology. Permission of staff member under whom course is to be taken is necessary. Hours to be arranged.

219 *Seminar: Clinical Psychology—Psychotherapy* (3)
Covers theoretical principles underlying psychotherapy, techniques and procedures, and problems of evaluation. TTh 7:10–9:00 P.M.

244 *Seminar: Job Analysis and Evaluation* (3)
Techniques for the development of work performed descriptions, qualifications analysis, and job demands specifications. The evaluations and classification of jobs for the purpose of establishing wage structures. MW 7:10–9:00 P.M.

281–82 *Practicum in Counseling* (3–3)
Supervised practical instruction in agencies doing counseling. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. Hours to be arranged.

283–84 *Practicum in Clinical Psychology* (3–3)
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212 and 233. Admission by permission of the Chairman of the Department. Hours to be arranged.

289 *Seminar: Current Research and Theory in Psychology* (3)
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic will be announced in the Schedule of Classes. MW 7:10–9:00 P.M.

295–96 *Research in Psychology* (arr.)
Hours and credits to be arranged.

299–300 *Thesis* (3–3)

Course Offered in Nine-Week Education Session

121 *Educational Psychology** (3)
Advanced course in educational psychology. June 17 to 21: lecture and conference—late afternoon; small group discussions and field work—evening. June 24 to July 5 group discussions and field work—afternoon.

Course Offered in Engineering Administration Program

145 *Principles of Human Relations* (3)
A basic course in the psychological principles underlying human relations. TTh 6:10–8:15 P.M.

RELIGION

10 *The New Testament* (3)
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. MWF 8:35–10:00 A.M.

59 *History of Religion* (3)
Primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism and Shintoism—their historical setting, founders, and development of religious thought and culture. MWF 11:10 A.M.–12:35 P.M.

60 *History of Religion* (3)
Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. TWTh 5:35–7:00 P.M.

122 *Christian Ethics and Modern Society* (3)
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. TWTh 7:10–8:35 P.M.

291–92 *Readings and Research* (3–3)
Investigation of special problems in the history of religion. Hours to be arranged.

299–300 *Thesis* (3–3)

* Concurrent registration for another morning or afternoon course is not permitted.

ROMANCE LANGUAGES AND LITERATURES*

FRENCH

1–2 *First-year French* (3–3)
Pronunciation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Full-year course: credit will not be given for French 1 until French 2 is completed. Workshop fee, $6 for each half.‡ Second half begins July 15. Lecture—MTWThF 8:10–10:00 A.M. or MTWThF 6:10–8:00 P.M.; workshop—to be arranged.

3–4 *Second-year French* (3–3)
Advanced grammar and composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 for each half.† Full-year course: credit will not be given for French 3 until French 4 is completed. Prerequisite: French 1–2 or two years of high school French. Second half begins July 15. Lecture—MTWThF 8:10–9:00 and 10:10–11:00 A.M.; or MTWThF 6:10–8:00 P.M.; workshop—to be arranged.

9–10 *French Conversation and Composition* (3–3)
Prerequisite: French 4 or the equivalent and permission of the instructor. Second half begins July 15. MTWThF 8:10–10:00 A.M.

49 *French Readings for Nonmajor Students* (3)
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. MTWThF 6:10–7:00 P.M.

130 *Contemporary French Literature* (3)
Surrealism in poetry and the novel. Lectures, discussions, and reports. MTWThF 6:10–7:00 P.M.

SPANISH

1–2 *First-year Spanish* (3–3)
Pronunciation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language workshop. Full-year course: credit will not be given for Spanish 1 until Spanish 2 is completed. Workshop fee, $6 for each half.* Second half begins July 15. Lecture—MTWThF 8:10–10:00 A.M. or MTWThF 6:10–8:00 P.M.; workshop—to be arranged.

3–4 *Second-year Spanish* (3–3)
Advanced grammar and composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 for each half.* Full-year course: credit will not be given for Spanish 3 until Spanish 4 is completed. Prerequisite: Spanish 1–2 or two years of high school Spanish. Second half begins July 15. Lecture—MTWThF 8:10–9:00 and 10:10–11:00 A.M.; or MTWThF 6:10–8:00 P.M.; workshop—to be arranged.

9–10 *Spanish Conversation and Composition* (3–3)
Prerequisite: Spanish 4 or the equivalent and permission of the instructor. Second half begins July 15. MTWThF 8:10–10:00 A.M.

158 *Spanish-American Literature since 1918* (3)
The Spanish-American literature of the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. MTWThF 6:10–7:00 P.M.

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* A standardized placement examination administered at registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination assignment is made to the appropriate course, with credit assigned on the usual basis.

† Students registering for French 1–2 or 3–4 or Spanish 1–2 or 3–4 must register for one lecture section and one workshop section for each half of the course. Change in workshop section requires a regular drop-add slip from the Department.

SLAVIC LANGUAGES AND LITERATURES

1–2 *First-year Russian* (3–3)
Beginner's course in fundamentals of grammar and pronunciation, with graded readin oral drill, and written practice. Full-year course: credit will not be given for Russia 1 until Russian 2 is completed. Workshop fee, $6 for each half.* Second half begi July 15. Lecture—MTWThF 6:10–8:00 P.M.; workshop—to be arranged.

109–10 *Advanced Russian Conversation and Composition* (3–3)
Developing proficiency in oral and written expression. Prerequisite: Russian 10. S ond half begins July 15. MTWTh 5:55–8:00 P.M.

SOCIOLOGY AND ANTHROPOLOGY†

SOCIOLOGY

2 *Man, Culture, and Society II* (3)
Development of culture and personality, the impact of groups and institutions on ma social behavior. A survey of the fields within sociology. MTWThF 10:10–11:00 A.

133 *The Family* (3)
Historical development of the family as a social institution, parent-child relatio family problems, disorganization and divorce, and family reorganization. MTWT 11:10–12:00 A.M.

226 *Problems of Underdeveloped Areas* (3)
Characteristics and problems of underdeveloped areas; the interrelationship of de graphic, economic, social, and cultural factors; measures and techniques to introd cultural changes. Hours to be arranged.

295–96 *Research* (arr.)

299–300 *Thesis* (3–3)

ANTHROPOLOGY

1 *Man, Culture, and Society I* (3)
The physical evaluation of man, and the origins and development of culture, includ a survey of the topic divisions of the field. MTWTh 7:10–8:15 P.M.

153 *Psychological Anthropology* (3)
The relevance of psychoanalytic and learning theories to the cross-cultural study personality. Cultural determinants of personality formation and mental hea MTWTh 5:55–7:00 P.M.

285–86 *Research* (arr.)
Hours to be arranged.

289–90 *Thesis* (3–3)

SPANISH

(*See* Romance Languages and Literatures page 39)

* Students registering for Spanish 1–2 or 3–4 or Russian 1–2 or 9–10 must register for one lec section and one workshop section for each half of the course. Change in workshop section requir regular drop-add slip from the Department.

† Anthropology 1 and Sociology 2 combine to make a year course which is prerequisite to all oth courses in Sociology and Anthropology.

SPEECH

A ***Speech Clinic***
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4. Hours to be arranged.

B ***American Speech for Foreign Students*** (3)
Class limited to foreign born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Analysis of individual voices through recordings. Recording fee, $5. MTWTh 5:55–7:00 P.M.

1 ***Effective Speaking*** (3)
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2. MTWThF 10:10–11:00 A.M. or MTWTh 5:55–7:00 P.M.

11 ***Voice and Diction*** (3)
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of sounds of English and the standards of speech. Recording fee, $4. MTWThF 10:10–11:00 A.M. or MTWTh 7:10–8:15 P.M.

32 ***Oral Reading*** (3)
Reading to others; theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, $2. MTWThF 9:10–10:00 A.M.

101 ***Voice and Phonetics*** (3)
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, $4. MTWTh 5:55–7:00 P.M.

121 ***Group Discussion and Conference Leadership*** (3)
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. MTWThF 11:10–12:00 A.M.

177 ***Clinical Practice in Speech Therapy*** (1)
Supervised case work in remedial speech—the University Speech Clinic, District of Columbia Crippled Children's Society, and Public School system. This course may be repeated for a total of 6 semester hours. Prerequisite: Speech 176 and permission of instructor. Hours to be arranged.

183 ***Clinical Practice in Hearing Therapy*** (1)
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and the Veterans Administration Audiology Clinic. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182 and permission of instructor. Hours to be arranged.

295 ***Research in Speech and Hearing*** (arr.)
Hours to be arranged.

299–300 ***Thesis*** (3–3)

Course Offered in Special Program

July 1 to July 30

385 ***Childhood Aphasia*** (4)
Designed to acquaint speech therapists and teachers of exceptional children with the Association Method of therapy; background lectures dealing with neurological, psychological, and psychiatric aspects of language disorders in children; comparison of cur-

rent theories and practices in therapy. Observation and clinical practice with classe of aphasic children at the Children's Hospital School for Aphasic Children. Pre requisite: Undergraduate degree in speech and hearing, special education, or allie fields. MTWThF 9:00 A.M.–3:00 P.M.

High School Speech Institute*

June 24 to August 2

Public Speaking

The fundamental principles and practice of public speaking. Emphasis on develo ing a sense of communication, poise, vocal and physical control, and in basic skills i the organization and development of ideas for informative, persuasive, and social speec purposes. Frequent and regular practice in the preparation and delivery of sho speeches. MTWThF 12:10–1:00 P.M.

Voice Improvement

Emphasis on developing characteristics of effective use of voice for speech. Voi analysis to provide improvement in control and use of pitch, rate, force, and quali Attention given to problems of articulation and pronunciation. Application throu practice to oral reading, speaking, and acting. MTWThF 11:10–12:00 A.M.

Workshop in Forensics

The study and practice of debating, parliamentary law, oratory, and group discussi The National High School debate and discussion topics form the basis for study analysis, research methods, case construction, and practice in debate and discussi techniques. Attention given to preparation and delivery of orations suitable for su contests as "I Speak for Democracy," "The American Legion Oratorical Contests," other competitions sponsored in area high schools. TTh 1:30–3:30 P.M.

Workshop in Theater

The study and practice of acting, play production, scenery, lighting, and make-u Application to the dramatic monologue and arena style production of one-act pla and scenes from three-act dramas. MW 1:30–3:30 P.M.

STATISTICS†

51 *Introduction to Business and Economic Statistics*† (3)

Survey of elementary principles and procedures for presenting, analyzing, and inte preting statistical data; consideration of characteristic values; measures of variabili sampling processes, index numbers, time series analysis, and simple correlation. P requisite: one entrance unit in algebra. Laboratory fee, $9. Lecture—TTh 10: 11:50 A.M.; laboratory—MW 10:10–11:50 A.M.

104 *Statistics in Psychology and Education I* (3)

Introductory study of statistical techniques necessary for application of statistics in search problems in psychology and education. Laboratory fee, $9. Lecture—M 10:10–11:50 A.M.; laboratory—TTh 10:10–11:50 A.M.

105 *Statistics in Psychology and Education II* (3)

Advanced study of statistical techniques necessary for an application of statistics research problems. Analysis of variance, correlation techniques, chi-square appli tions, and sampling theory. Prerequisite: Statistics 53. Laboratory fee, $9. Lectur TTh 1:10–2:50 P.M.; laboratory—MW 1:10–2:50 P.M.

107 *Statistics for Engineers* (3)

Simple probability models, discrete and continuous distributions, sampling, hypothe

* Tuition for two courses and one workshop—$75.00. Tuition for additional workshop—$25. Registration day—Monday, June 24.

Courses in this program do not carry college credit.

† Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit be for only one of the three may be applied toward a degree.

Statistics 91 is for Statistics majors, for students in engineering and in the biological and phys sciences.

testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. MW 5:30–8:00 P.M. or TTh 5:30–8:00 P.M.

117 *Analysis of Variance I* (3)
The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Applications are stressed. Prerequisite: Statistics 91. Laboratory fee, $9. Lecture—TTh 6:10–7:50 P.M.; laboratory—MW 6:10–7:50 P.M.

155 *Introduction to Mathematical Probability* (3)
Probability distributions. Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers, limit theorems. Prerequisite: differential and integral calculus. MW 5:30–8:00 P.M.

297 *Seminar: Problems in Mathematical Statistics* (3)
MW 6:10–8:00 P.M.

Courses Offered in Special Programs

In addition to the regular courses announced above the University offers the following courses in statistics for students enrolled in the special programs.

119 *The Bases of Statistical Decision Making* (3)
For students in the Navy Graduate Financial Management Program only. Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3)
For students in the Air Force Advanced Management Program only. Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses.

ZOOLOGY

BIOLOGY*

1–2 *Introductory Biology** † (4–4)
Biology 1—Plant Sciences (4)—section B: June 18 to July 17, MTWThF 6:10–10:00 P.M.; section A: July 18 to August 19, MTWThF 1:10–5:00 P.M.
Biology 2—Animal Sciences (4)—section A: June 18 to July 17, MTWThF 1:10–5:00 P.M.; section B, July 18 to August 19, MTWThF 6:10–10:00 P.M.
This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence: students may start the course with either Biology 1 or Biology 2. Material fee, $10 for each half.

ZOOLOGY*

140 *Cell Physiology*† (3)
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. MWF 6:10–7:35 P.M.

148 *Histology* (3)
An introduction to the microscopical anatomy of normal tissues and organs. Material fee, $11. Lecture—MW 7:10–8:00 P.M.; laboratory—MW 8:10–10:00 P.M., TTh 7:10–9:00 P.M.

* Biology 1–2 is prerequisite to all second-group courses in Zoology, except by permission of the instructor.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

295 *Research* (3)
Investigation of special problems. Hours to be arranged.

299 *Thesis* (3)
Hours to be arranged.

LAW

First Session

June 11 to July 25

115 *Contracts I* (4)
Mutual assent, offer and acceptance, consideration, parol evidence rule, Statute Frauds, third party beneficiaries, assignments, conditions. MTWThF 5:50–7:40 P.M.

202 *Administrative Law* (3)
The position of the administrative process in the separation of powers, including status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. MTThF 5:50–7:40 P.M.

215 *Civil Procedure* (4)
Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis on Federal Rules of Civil Procedure and other modern codes. MTWThF 9:10–11 A.M. or MTWThF 5:50–7:40 P.M.

235 *Domestic Relations* (2)
Marriage, annulment, and divorce; adoption and custody of children; economic tions. MTWThF 12:10–1:00 P.M.

243 *Federal Jurisdiction* (2)
Constitutional and statutory origins of federal courts, cases arising under the laws the Constitution, diversity of citizenship, jurisdictional amount, removal procedure jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substan law applied by federal courts. MTWThF 11:10–12:00 A.M.

285 *Trusts and Estates I* (3)
An integrated view of considerations (other than tax) in noncommercial transfer wealth at death or during life with emphasis on the drafting of documents best su to achieve the wishes of the property owner and meet the needs of his family. Distri tion and administration of intestate estates; formal requirements for execution of w and trusts; revocation and alteration; grounds for contest; limits on testamentary fr dom. MTThF 5:50–7:40 P.M.

309 *Conflict of Laws* (3)
Legal problems arising from occurrences transcending state or national boundari jurisdiction; foreign judgments; constitutional influences; theoretical bases of che of law principles and their application to specific fields, including torts, contra property, family law, administration of estates, and business associations. Section MTW 9:10–11:00 A.M. and ThF 9:10–10:00 A.M. Section B: MTThF 5:50– P.M.

330 *Federal Antitrust Laws* (3)
Restraints of trade at common law and under Sherman Antitrust Act of 1890, Fede Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreeme trade associations, exclusive-dealing agreements, tie-in sales, and trade boycotts; p ents and copyrights under antitrust laws. MTThF 5:50–7:40 P.M.

Second Session

July 29 to September 11

116 *Contracts II* (2)
Scope of protection afforded contracts; specific performance of contracts other land transactions. MT 5:50–8:05 P.M.

150 *Real Property* (4)
Historical background of the law of estates and conveyancing; types of estates; dower and curtesy; landlord and tenant relationship; concurrent estates; future interests at common law and after Statute of Uses; Rule against Perpetuities; incidents of divided ownership, as waste; natural rights. MTWThF 5:50–7:40 P.M.

201 *Agency* (2)
Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification. ThF 5:50–8:05 P.M.

219 *Commercial Paper* (3)
Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law. MTThF 5:50–7:40 P.M.

230 *Conveyances* (2)
Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and user. MTWThF 12:10–1:00 P.M.

240 *Evidence* (4)
Functions of court and jury; qualifications and examination of witnesses; opinion, relevancy, and scientific evidence; proof of writing; application of the hearsay rule. MTWThF 9:10–11:00 A.M. or MTWThF 5:50–7:40 P.M.

251 *Insurance* (2)
The insurance device in life, property, and other risks. MTWThF 12:10–1:00 P.M.

279 *Taxation—Federal Income* (3)
Survey of substantive provisions of federal income tax, including concept of gross income, limitations on allowable deductions, problems of capital gains taxation, nontaxable exchanges of property, basis problems, provisions affecting the taxation of the family, and principles of income tax accounting. MTThF 5:50–7:40 P.M.

286 *Trust and Estates II* (3)
An integrated view of considerations (other than tax) in noncommercial transfers of wealth at death or during life with emphasis on the drafting of documents best suited to achieve the wishes of the property owner and meet the needs of his family. Dispositive provisions in wills and trusts; common problems of construction; future interests questions including class gifts, powers of appointment, and limits imposed by Rule Against Perpetuities, etc.; problems of administration of estates and trusts including allocations to principal or income, investments, powers to manage, sell, etc.; charitable trusts. Supervised practice in drafting is included. Prerequisite to Law 286: Law 285. MTThF 5:50–7:40 P.M.

[illegible]5 *Unfair Trade Practices* (3)
Unfair trade practices at common law and under statutes; trade-marks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; miscellaneous business practices. MTThF 5:50–7:40 P.M.

[illegible]6 *Restitution* (2)
Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment. MTWThF 11:10–12:00 A.M.

Thirteen-Week Session

June 11 to September 11

[illegible]0 *Conveyances* (2)
Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user; zoning and other land controls. W 5:50–8:05 P.M.

[illegible]3 *Equity* (2)
A correlation of aspects of equity considered in earlier courses, and inquiring into the nature of equity jurisprudence through analysis of selected problems in equity; his-

torical development of equity, including problems of merger of law and equity: use equity jurisdiction offensively and defensively, including multi-party actions, injun tion of executive and legal actions, and equitable abstention; emphasis on the fashio ing of equitable remedies. W 5:50–8:05 P.M.

270 *Legislation* (2)
The legislative process and roles of various participants in the process; operation the United States Congress and state legislatures, including fact finding, organizati and procedure; problems of statutory interpretation. W 5:50–8:05 P.M.

359 *Patent Law* (2)
Origin and nature of patents, patentable subject matter, classes of patents, novel utility, invention, patent claims and their interpretation, acts constituting infringeme correction of patents. W 5:50–8:05 P.M.

EDUCATION

Nine-Week Session—June 17 to August 16

First Block—June 17 to July 5

108B *Human Development, Learning, and Teaching* (3)
(Formerly Education 109–10)
For the general student as well as the prospective teacher. Principles of effec teaching based on an understanding of human development and the nature of learni Prerequisite: Psychology 22 or 121. A six-week course—June 17 to July 26: lectu MW 6:40–9:00 P.M.; conference 6:00–6:40 P.M. (days to be arranged).

112 *Educational Measurement** (3)
Scope, needs, services to students, selection and construction of teacher-made t interpretation of tests for evidence purposes. Prerequisite: Education 108 and June 17 to 21: lecture—late afternoon; small group discussions and field work— ning. June 24 to July 5: lecture and conference—morning; small group discus and field work—afternoon.

117 *Elementary School Science** † (3)
For teachers. Content, methods, materials, and activities essential in the eleme school curriculum. Prerequisite: Education 108 and 123 or teaching experience. 17 to 21: lecture—late afternoon; small group discussions and field work—eve June 24 to July 5: lecture and conference—morning; small group discussions and work—afternoon.

216 *Education of Slow-learning Children** ‡ (3)
Identification, nature, and needs of slow-learning elementary and junior high sc children. Emphasis on diagnosis and treatment of learning difficulties. June 17 t lecture—late afternoon; small group discussions and field work—evening. June July 5: lecture and conference—morning; small group discussions and field wor afternoon.

219 *Elementary School Classroom Procedures** ‡ (3)
Current classroom practices with particular emphasis on ways of planning, unit te ing, techniques in discipline; individual and group evaluation techniques, resou for learning, providing for individual differences. June 17 to 21: lecture—late a noon; small group discussions and field work—evening. June 24 to July 5: lecture conference—morning; small group discussions and field work—afternoon.

221 *Early Childhood Education** ‡ (3)
The philosophy and principles underlying the teaching of four to seven year Emphasis is on organization, equipment, methods, and materials for promoting

* A workshop course requiring the full daytime attention of enrollees. Concurrent registration another course scheduled in morning or afternoon not permitted.
† This course may not be taken by students who have completed or plan to enroll in Education
‡ Prerequisite: adequate professional preparation.

growth needs of young children. June 17 to 21: lecture—late afternoon; small group discussions and field work—evening. June 24 to July 5: lecture and conference—morning; small group discussions and field work—afternoon.

245 *School and Community** ‡ § (3)
The school as an important member of a team of social agencies that builds the community. June 17 to 21: lecture—late afternoon; small group discussions and field work—evening. June 24 to July 5: lecture and conference—morning; small group discussions and field work—afternoon.

255 *Secondary Education** ‡ (3)
Current proposals for the improvement of secondary education. June 17 to 21: lecture and conference—late afternoon; small group discussions and field work—evening. June 24 to July 5: lecture and conference—morning; small group discussions and field work—afternoon.

257 *Occupational and Educational Information** ‡ (3)
(Formerly Psychology 229)
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. June 17 to 21: lecture and conference—late afternoon; small group discussions and field work—evening. June 24 to July 5: lecture and conference—morning; small group discussions and field work—afternoon.

Psychology 121 *Educational Psychology** (3)
Advanced course in educational psychology. June 17 to 21: lecture and conference—late afternoon; small group discussions and field work—evening. June 24 to July 5: group discussions and field work—afternoon.

Second Block—July 8 to July 26

108A *Human Development, Learning, and Teaching** (3)
(Formerly Education 109–10)
For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. Lecture and conference—morning; small group discussions and field work—afternoon.

115 *Teaching of Reading in the Elementary School** † (3)
A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123 or teaching experience. Lecture and conference—morning; small group discussions and field work—afternoon.

116 *Elementary School Social Studies** † (3)
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. Lecture and conference—morning; small group discussions and field work—afternoon.

120 *Elementary School Arithmetic** † (3)
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. Lecture and conference—morning; small group discussions and field work—afternoon.

138 *Teaching Social Studies** (3)
For senior year students and experienced teachers. Content, methods, materials, and activities. Prerequisite: Education 108, 123, 131, and 24 semester hours of social

* A workshop course requiring the full daytime attention of enrollees. Concurrent registration for another course scheduled in morning or afternoon not permitted.
† This course may not be taken by students who have completed or plan to enroll in Education 111.
‡ Prerequisite: adequate professional preparation.
§ This course may not be taken by students who have completed or plan to enroll in Education 123 (formerly 121).

studies. Lecture and conference—morning; small group discussions and field work—afternoon.

205 *The Curriculum** ‡ (3)
For experienced teachers. Curriculum foundations and issues; comparison of curriculum patterns. Lecture and conference—morning; small group discussions and field work—afternoon.

225 *Elementary School Reading** ‡ (3)
Developmental and remedial approaches to reading problems. Demonstrations. Developmental and remedial approaches to reading problems by the classroom teacher and the reading specialist or supervisor. Lecture and conference—morning; small group discussions and field work—afternoon.

243 *Human Relations in the Classroom** ‡ (3)
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. Lecture and conference—morning; small group discussions and field work—afternoon.

256 *Secondary Education** ‡ (3)
Current problems in each of the subject-matter fields. Lecture and conference—morning; small group discussions and field work—afternoon.

Third Block—July 29 to August 16

113 *Elementary School Art** (3)
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Material fee, $4.50. Lecture and conference—morning; small group discussions and field work—afternoon.

114 *Elementary School Music** (3)
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Lecture and conference—morning; laboratory and field work—afternoon.

123A *Society and the School*# (3)
(Formerly Education 121–22)
For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; cooperation of school with other community agencies; functions of school personnel. Lecture and conference—morning; small group discussions and field work—afternoon.

128 *Children's Literature** † (3)
For teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. Lecture and conference—morning; small group discussions and field work—afternoon.

231 *Secondary School Classroom Procedures** ‡ (3)
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques; teaching aids, etc.; review of recent literature. Lecture and conference—morning; small group discussions and field work—afternoon.

241 *Education of the Gifted** ‡ (3)
For the classroom teacher. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects. Lecture and conference—morning; small group discussions and field work—afternoon.

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* A workshop course requiring the full daytime attention of enrollees. Concurrent registration in another course scheduled in morning or afternoon not permitted.
† This course may not be taken by students who have completed or plan to enroll in Education
‡ Prerequisite: adequate professional preparation.
This course may not be taken by students who have completed or plan to enroll in Educatio

277 *Administration of School Personnel** ‡ (3)
Techniques and problems of administration related to more effective service of staff personnel. Lecture and conference—morning; small group discussions and field work —afternoon.

Six-Week Session—July 8 to August 16

123B *Society and the School*# (3)
(Formerly Education 121–22)
For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel. TTh 6:40–9:00 P.M.; two conference hours to be arranged.

217 *Philosophy of Education*‡ (3)
Designed to help students formulate a personal philosophy of education. MTWThF 8:00–9:00 A.M.; two conference hours to be arranged.

229 *Administration of Elementary Education*‡ (3)
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. MTWThF 1:00–2:00 P.M.; two conference hours to be arranged.

233 *Audio-visual Education*‡ || (3)
Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7. MW 6:40–9:00 P.M.; two conference hours to be arranged.

251 *Guidance in Secondary Schools*‡ || (3)
Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. MW 6:40–9:00 P.M.; two conference hours to be arranged.

258 *Techniques of Counseling* (3)
(Formerly Psychology 228)
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems will be discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 and 257 may be taken concurrently with 258. MTWThF 9:10–10:10 A.M.; two conference hours to be arranged.

271 *The Teacher and School Administration** ‡ (3)
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. MTWThF 10:20–11:20 A.M.; two conference hours to be arranged.

272 *The Teacher and School Supervision*‡ || (3)
Nature, organization, human relationships, and techniques. TTh 6:40–9:00 P.M.; two conference hours to be arranged.

279 *Adult Education*‡ || (3)
Current concepts and objectives, agencies involved, programs on all levels—international through community. TTh 6:40–9:00 P.M.; two conference hours to be arranged.

* A workshop course requiring the full daytime attention of enrollees. Concurrent registration for another course scheduled in morning or afternoon not permitted.
‡ Prerequisite: adequate professional preparation.
|| Enrollees fully employed may not register for another course.
This course may not be taken by students who have completed or plan to enroll in Education 245.

295A *Educational Research Methods and Procedures* (3)
Required of all Master of Arts candidates following Plan 2. Knowledge of elementa
statistics required. MTWThF 9:10–10:10 A.M.; two conference hours to be arrange

295B *Educational Research Methods and Procedures* (3)
Required of all Master of Arts candidates following Plan 2. Knowledge of elementa
statistics required. MTWThF 1:00–2:00 P.M.; two conference hours to be arrange

297 *Reading in Education*
To assist those preparing for the comprehensive examinations. No credit toward
gree requirements. MTWThF 4:45–5:45 P.M. Tuition fee, $33.

Journalism 190 *Supervising School Publications* (3)
The role of journalism in society and the secondary school. Basic reporting, c
editing, make-up, and law of the press. Editorial, business, and mechanical aspe
of scholastic newspaper, magazine, and yearbook publication. MW 6:40–9:00 P.
two conference hours to be arranged.

THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), and Doctor of Business Administration (D.B.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), and Master of Public Administration (M.P.A.)

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications should be addressed as indicated.

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Columbian College of Arts and Sciences.....Director of Admissions
Division of University Students.....Director of Admissions
Fellowships, Scholarships, Prizes, Financial Aid.....Chairman, Committee on Scholarships
General Catalogue of the University.....Director of Admissions
Graduate Council.....Dean of the Graduate Council
Law School and Graduate School of Public Law.....Director of Admissions
School of Education.....Director of Admissions
School of Engineering and Applied Science.....Dean of the School
School of Government, Business, and International Affairs.....Director of Admissions
School of Medicine.....Admissions Office, School of Medicine
Summer Sessions.....Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters.....Registrar
Schedule of Classes: Summer Sessions.....Dean of the Summer Sessions

THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF PHARMACY, 1906

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AIR SCIENCE, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

The George Washington University

Bulletin

THE CATALOGUE ISSUE
1963-64

WASHINGTON 6, D. C.
JULY 1963
VOL. LXII No. 15

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

Admission ..... Director of Admissions, Building C

School of Medicine ..... 1339 H Street NW

Air Science (ROTC) ..... Director of Air Science, Chapin Hall

Alumni Association ..... Alumni Office, Bacon Hall

Medical Alumni Association ..... 1335 H Street NW

Foreign Students ..... Adviser to Foreign Students, Building

Graduate Study

In Arts and Sciences

Master's degrees ..... Dean of Columbian College of Arts and Science

Doctor of Philosophy ..... Dean of The Graduate Council

In Education ..... Dean of The School of Education

In Engineering or Applied Science ..... Dean of The School of Engineering and Applied Science

In Law ..... Dean of The Graduate School of Public Law

In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care (including Hospital) Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs ..... Dean of The School of Government, Business, and International Affairs

Housing

Men ..... Dean of Men, Building

Women ..... Dean of Women, Woodhull House

Scholarships ..... Chairman, Committee on Scholarships, Building

Student Employment ..... Student Placement Office, 2114 G Street NW

Summer Sessions ..... Dean of the Summer Sessions, Building

Transcripts of Records ..... Registrar, Building

Veterans Education ..... Director of Veterans Education, Building

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THE CATALOGUE ISSUE
1963-64

VOLUME LXII JULY 1963 NUMBER 15


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Folger
Shakespeare
Library
Supreme Court
THE CAPITOL
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Federal
Trade Comm
Dept of Justice
Treasury Dept
International
Fund &
Bank
Executive
Office Bldg
WHITE
HOUSE
Post Office
Dept
George Washington
University Hospital
Dept of
Commerce
Dept of Labor
National Gallery of Art
Natural History Bldg
Smithsonian
Institution
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Voice of America
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THE UNIVERSITY CALENDAR

1963

July

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
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August

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September

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October

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December

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January

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February

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March

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April

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June

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July

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August

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September

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October

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November

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December

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13	14	15	16	17	18
20	21	22	23	24	25
27	28	29	30	31	....

THE UNIVERSITY CALENDAR*
1963-64

FALL SEMESTER:

Advising: freshmen	Sept 11–18 ..... Wed–Wed
School of Engineering placement tests: entering freshmen	Sept 12 ..... Thurs
Orientation Assembly: all new students	Sept 13 ..... Fri
Curriculum Assemblies: new students attend one	Sept 13 and 16 ..... Fri and Mon
Placement tests (other than Engineering)	Sept 16 ..... Mon
Advising: transfer students and upper classmen	Sept 16–18 ..... Mon–Wed
University Faculty Assembly Meeting	Sept 18 ..... Wed
Registration	Sept 19–21† ..... Thurs–Sat
Application for Feb graduation due in Registrar's Office	
Classes begin	Sept 23 ..... Mon
Subjects of Master's theses of Feb candidates due in appropriate Dean's Office	Oct 4 ..... Fri
S.J.D. dissertations of Feb candidates due	Oct 4 ..... Fri
Board of Trustees Meeting	Oct 17 ..... Thurs
Veterans Day (holiday)	Nov 11 ..... Mon
Thanksgiving recess	Nov 28–30 ..... Thurs–Sat
Ph.D., D.Sc., Ed.D., and D.B.A. dissertations of Feb candidates due in appropriate Dean's Office	Dec 2 ..... Mon
Graduate Record Examination	Dec 14 ..... Sat
Christmas recess	Dec 21–Jan 1 ..... Sat–Wed
Classes resume	Jan 2 ..... Thurs
Master's theses of Feb candidates due in appropriate Dean's Office	Jan 2 ..... Thurs
Last day of fall-semester classes	Jan 15 ..... Wed
Board of Trustees Meeting	Jan 16 ..... Thurs
Examination period	Jan 20–25 ..... Mon–Sat

SPRING SEMESTER:

Advising: freshmen, sophomores, and all new students	Jan 20–29 ..... Mon–Wed
Placement tests	Jan 27 ..... Mon
Registration	Jan 30–Feb 1† ..... Thurs–Sat
Application for June graduation due in Registrar's Office	

*In the School of Medicine registration is conducted September 12, from 10:00 A.M. to 4:00 P.M.; classes begin September 16. The Calendar of the School of Medicine is published in the schedule of classes for that School.

†Thursday and Friday from 12:00 to 8:00 P.M.; Saturday from 10:00 A.M. to 1:00 P.M.

Spring-semester classes begin	Feb 3
Subjects of Master's theses of June candidates due in appropriate Dean's Office	Feb 7
S.J.D. dissertations of June candidates due	Feb 7
University Faculty Assembly Meeting	Feb 11
Winter Convocation (holiday)	Feb 22
Board of Trustees Meeting	March 19
Spring recess	March 25–31
Ph.D., D.Sc., Ed.D., and D.B.A. dissertations of June candidates due in appropriate Dean's Office	April 1
Master's theses of June Engineering candidates due in Dean's Office	April 6
Graduate Record Examination	April 11
Master's theses of June candidates (other than Engineering) due in appropriate Dean's Office	May 1
Last day of spring-semester classes	May 20
Examination period	May 23–29
Memorial Day (holiday)	May 30
Board of Trustees Annual Meeting	June 6
Baccalaureate Service	June 7
Commencement	June 7

SUMMER SESSIONS:*

Registration for eight-week term	June 22
Classes begin	June 23
Independence Day (holiday)	July 4
Eight-week term ends	Aug 14
REGISTRATION FOR FALL SEMESTER 1964–65	Sept 17–19

* For all schools and colleges offering courses in the Summer Sessions except the Law School, Graduate School of Public Law, and the School of Education.

The dates of the calendar of the Law School and the Graduate School of Public Law will be announced.

The calendar for the special sessions of the School of Education will be announced in the 1964 Summer Sessions Catalogue.

THE UNIVERSITY

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the prinicples of Politics & good Government."

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provisions of Washington's will, and the stock he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of Congress.

In order to implement the college, a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government."

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "that persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as

one of the early nonsectarian institutions of higher learning in the United States, u
der the distinguished favor of President James Monroe and members of his Cabin

A tract of approximately forty-seven acres, extending about one-half mile nort
west of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Stree
was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 182
Congress and the Supreme Court adjourned their sessions to enable their members
attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Her
Clay and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the College was changed
"Columbian University", in recognition of the enlarged scope of the institution.
1884 the University was moved from its first location on "College Hill", now Colu
bia Heights, to the new University Hall built for it at Fifteenth and H Streets. Ne
by buildings accommodated the School of Medicine and somewhat later, the L
School.

For a period of six years, from 1898 to 1904, the University was placed under co
trol of the Baptist Denomination. In 1904 an act restoring the original secular cha
acter of the University and authorizing change of name to The George Washingt
University was passed by Congress.

Subsequently all colleges, schools, and divisions of the University except t
School of Medicine were brought together in the area bounded by Nineteent
Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medici
is situated on H Street between Thirteenth and Fourteenth Streets NW.

PURPOSE AND OBJECTIVES

The purpose of The George Washington University expressed in the words of t
Bill of Incorporation, introduced and subsequently enacted by Congress in 182
was to realize "the aspirations of Washington, Jefferson, and Madison, for the cre
tion of a university at the seat of the Federal Government." Over the years it h
been the aim to develop the University ideal in the Nation's Capital with a view t
ward meeting the changing needs of society while continuing to pursue the tra
tional principles of learning and research.

The George Washington University now rededicates itself and all the resources
its command to the pursuit of knowledge and its dissemination.

To this end:

The University recognizes its special opportunities in and obligations to one of th
principal capitals of the world. It is a primary objective of the University to utili
its historical, geographical, and functional relationship to the Nation's Capital an
the Washington community in continuing the development of a great nationally an
internationally oriented university.

The University recognizes the needs of our times and accepts the challenge t
develop each student's potential abilities to the fullest extent.

The University is and should remain privately controlled, nonsectarian, and co
educational.

Admission to the University is determined only in terms of the personal characte
and academic qualifications of the candidates.

A broadly based liberal education is fundamental to the total program of the Un
versity.

Expansion of graduate and professional studies and research and the utilization for these purposes of the excellent research facilities and materials available in the Nation's Capital are basic to the continuous development of the University's educational program.

The provision of superior instruction and facilities and the application of high standards of entrance qualifications and academic achievement to all students whether full-time or part-time, on-campus or off-campus, are major missions of the University.

A balanced program of student extra-curricular activities is an integral part of the University program.

The University will continue to strive to meet the evident needs of an enlarging student body while governing the size of enrollment by its capacity to supply adequate staff and facilities for the excellent teaching and research which it espouses.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes thirteen colleges, schools, and divisions, as follows:

Columbian College of Arts and Sciences, through its lower and upper divisions, offers four-year programs in the arts and sciences leading to the degrees of Bachelor of Arts, Bachelor of Science, and (in cooperation with the Department of Pathology and the University Hospital) Bachelor of Science in Medical Technology. The lower division also provides the first two years of the prelegal and premedical programs, the preprofessional work required for admission to the schools of Pharmacy; Education; and Government, Business, and International Affairs; and two-year terminal curricula in Accounting, Physical Sciences, and Secretarial Studies. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; the Physical Sciences curriculum leads to the degree of Associate in Science. The graduate division offers programs leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The National Law Center includes the Law School and the Graduate School of Public Law. The Law School offers professional courses leading to the degree of Bachelor of Laws. The Graduate School of Public Law offers programs leading to the degrees of Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering and Applied Science offers courses leading to the Engineering Technologists Certificate and the degree of Bachelor of Science in the following areas: Civil Engineering, Communications, Control Systems, Electrical Engineering, Electronics, Energy Conversion, Engineering Science, Machine Computers, Measurement Science, Mechanical Engineering, Structures, Theoretical and Applied Mechanics. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Pharmacy offers courses leading to the degree of Bachelor of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, and Bachelor of Science in Physical Education, and

graduate studies leading to the degrees of Master of Arts in Education and Doct of Education.

The School of Government, Business, and International Affairs offers work leadi to the following degrees: (1) Bachelor of Arts in Government with a major in Inte national Affairs or Public Affairs; (2) Bachelor of Business Administration with major in Accounting, Business Administration, or Business and Economic Statistic (3) Master of Arts in Government with a major field in Public Administration, Pu lic Affairs, International Affairs, Economic Policy, Business and Economic Statistic or Personnel Administration; (4) Master of Business Administration with a majo field in Accounting, Business Administration, Health Care (including Hospital) A ministration, or Personnel Administration; (5) Master of Public Administration wi a major field in Public Administration or Personnel Administration; (6) Doctor Business Administration or Doctor of Public Administration.

The College of General Studies supplements the adult education program of t University through its Off-Campus Division, Campus Division, and Division of Co munity Services. This College offers programs leading to the degrees of Associa in Arts; Associate in Science; Associate in Secretarial Administration; Bachelor Arts; Bachelor of Business Administration; Bachelor of Science in Cartography; Ma ter of Arts in the fields of Controllership; Governmental Administration, and Pe sonnel Management; Master of Business Administration; Master of Arts in Inte national Affairs; Master of International Affairs; and Master of Public Administr tion.

The Division of University Students makes available courses for students not ca didates for degrees in this University.

The Division of Air Science offers a program of Air Force ROTC training which integrated with the curricula of the colleges and schools of the University and lea to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ADMINISTRATIVE AND RESEARCH ACTIVITIES

Administrative Units

The University maintains the following Administrative Units: Health Service Veterans Education, the Reading Clinic, the Speech Clinic, and the Testing an Counseling Center.

Research Projects

Research projects sponsored by agencies of the Federal Government and by priva foundations and industries are conducted. Cooperation between these projects a the various departments of instruction is as close as the nature and needs of t projects and departments will permit.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agenc the Middle States Association of Colleges and Secondary Schools. This is importa to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of Univers Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering and Applied Science is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education. The Department of Chemistry is on the approved list of the American Chemical Society.

LOCATION

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

EDUCATIONAL FACILITIES

Buildings, grounds, and equipment are valued at approximately $27,000,000.

The buildings of Columbian College of Arts and Sciences; the Graduate Council; the National Law Center: the Law School and the Graduate School of Public Law; the School of Engineering and Applied Science; the School of Pharmacy; the School of Education; the School of Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; the University Hospital and Clinics; and the University Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

John Quincy Adams Hall, 730 Nineteenth Street. Residence hall for men.

Bacon Hall, 2000 H Street. Named in honor of the late Joel Smith Bacon, President of the University from 1843 to 1854. Offices of the Dean of the Graduate Council, the Dean of the Graduate School of Public Law, the Dean and Assistant Dean for Sponsored Research, the Assistant to the President (Special Projects), the Development Division, the Management Research Group, the Educational Counselor. Offices and lounge for the Law Faculty; the Alumni Office; Alumni Reception Room.

Binney Hall, 2018 Eye Street. Named in honor of the late Joseph Getchell Binney, President of the University from 1855 to 1858. Offices, classrooms, and laboratories of the Reading Clinic.

John C. Calhoun Hall, 2100 Eye Street. Residence hall for men.

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Vice President and Treasurer, the Cashier, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

William H. Crawford Hall, 2119 H Street. Residence hall for women.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Everglades Apartments, 2223 H Street. Residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2010–12 H Street.

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean and the Assistant Dean of the School of Government, Business, and International Affairs; the departments of Economics, Government and Business, History, International Affairs, Political Science, and Statistics. Offices of the Air Force Advanced Management Program, Air Force Military and Economics Program, Institute for Sino-Soviet Studies, and Navy Graduate Financial Management Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations; lounges, reading rooms.

Hospital and Clinics, Washington Circle.

Hospital Staff Office Building, 818 Twenty-second Street.

International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, the Speech Clinic, and the housing officer; Athletic Ticket Office.

Dolley Madison Hall, 736 Twenty-second Street. Residence hall for women.

James Monroe Hall, 2115 G Street. Offices of the deans of Columbian College of Arts and Sciences, the Division of University Students, the School of Education; the departments of Education, English (English and American Literature), Germanic Languages, Journalism, Mathematics, Psychology, and Secretarial Studies; classrooms.

Office of the President, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Administrative Secretary, Assistant to the Dean of Faculties for Planning, and department of Classical Languages.

Placement Office, 2114 G Street.

Samson Hall, 2036 H Street. Named in honor of the late George Whitefield Samson, President of the University from 1859 to 1871. Comptroller's Office; Disbursing Office; offices of the departments of Chemistry, Geology, and Physics.

School of Medicine, 1335–1339 H Street. Offices of the Dean, Associate Dean, School of Medicine Admissions, and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; Medical Alumni Association; and University Medical Bookstore.

Sorority Halls:

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.

2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.

2131 G Street. Apartment of Delta Gamma Sorority.

2137 F Street. Apartment of Alpha Epsilon Phi Sorority.
802 Twenty-first Street. Apartment of Phi Sigma Sigma Sorority.
Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project.
Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Law School; offices of the National Law Center and the Dean, Associate Dean, and Faculty of the Law School; library; and lecture halls.
Hattie M. Strong Hall, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University. Residence hall for women.
Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.
Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of the late Charles H. Tompkins, former Trustee of the University. Offices of the Dean, Assistant Deans, and Faculty of the School of Engineering and Applied Science; the classrooms and laboratories; The Center for Measurement Science; Electronics Research Project; Computer Research Project, National Aeronautics Space Administration; Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.
University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.
University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The Library, rooms of the Board of Trustees, Faculty Conference Room, classrooms, office of the Dean of the National Law Center.
The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of The George Washington University Cancer Clinic.
Welling Hall, 814 Twenty-second Street. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894. Residence hall for men.
Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Offices of the Dean of Women and College of General Studies Admissions; meeting rooms for student activities.
Building A, 2026 G Street. Offices of the Department of Romance Languages.
Building A-A, 2129 Eye Street. Offices of the Computer Programs Research Project and Area Redevelopment Project.
Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.
Building B-B, 2204 Eye Street. Offices and laboratories of the Medical Instrumentation Project.
Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Botany, Geology, and Zoology; language laboratories; classrooms.
Building C-C, 2035 H Street. Offices of the Center for Behavorial Sciences and Faculty offices.
Building D, 2013 G Street. Offices of the Business Manager, Maintenance; Mail Room.
Building D-D, 2120 Eye Street. Office of the Vice President for Plans and Resources.
Building E, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Assistant to the Dean of Faculties for Planning, and Administrative Secretary; office of the Department of Classical Languages.
Building E-E, 816 Twenty-first Street. Offices and seminar rooms of Health Care (including Hospital) Administration.
Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies.
Building G, 712 Twentieth Street. Offices of the Department of English (Composition section); Academic Editor.
Building H, 714–16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.
Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography and Regional Science.
Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.
Building K, 817 Twenty-third Street. Classrooms, playing court, locker rooms, and office of the Department of Physical Education for Women.

Buildings M and N, 716–18 Twenty-first Street. Offices of the departments of Slavic Languages and Philosophy; offices and laboratories of the Testing and Counseling Center.
Building O, 2106 G Street. Offices of the Department of Religion and University Chapel.
Building P, 2108 G Street. Offices of the Student Health Services, Adviser to Special Students in Columbian College, and of the University Historian.
Building Q, 2029 H Street. Offices of the Dean of Men, the Director of Veterans Education, and the Plant Engineer.
Building R, 2027 H Street. Offices of the Director of Athletics, and the Athletic Staff.
Building S, 2025 H Street. Offices of the Department of Physical Education for Men and Public Relations.
Building T, 2110 G Street. Offices of the Dean of the Summer Sessions; Chairman of Committee on Scholarships; International House (see International House).
Building U, 729 Twenty-second Street. Driver Behavior Research Project.
Building V, 2114 H Street. Research laboratories of the Department of Physics.
Building W, 2128 H Street. Offices of the Dean and Faculty of the School of Pharmacy; pharmacy laboratories; classrooms.
Building X, 2107 H Street. Offices of the departments of Art and Sociology and Anthropology; Music Program; Population Research Project; Faculty offices.
Building Y, 802 Twenty-first Street. Offices of the Department of Government and Business.
Building Z, 708 Twenty-second Street. Offices of the Patent, Trade-Mark, and Copyright Foundation.

LIBRARY FACILITIES

The Library collections of The George Washington University are housed in the University Library, the general library of the University; and in the departmental libraries of law, in Stockton Hall, and medicine, in the School of Medicine.

These collections contain approximately 371,000 volumes—285,000 in the University Library, 60,000 in the Law Library, and 26,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American Literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 2,100 periodicals.

In the modern University Library building, erected in 1939, on the first three floors are the delivery hall, card catalogue, reference and main reading rooms, periodical room, and reserve book rooms; on the fourth floor are ten planned seminar rooms. To the original 135,000 volume eight-tier stack of modern steel construction has been added a similar unit of 170,000 volume capacity with 50 study carrels.

Of the special subject collections in the University Libraries, the most recent acquisition is the internationally known library of the Carnegie Endowment for International Peace, which was assembled during forty years of its activity in Washington, and was purchased by the University. The collection contains 50,000 bound volumes and 20,000 pamphlets in the fields of international law and relations, history, and economics. Other collections in the Library are the W. Lloyd Wright collection of Washingtoniana, acquired in 1950; the Richard Heinzel Collection of Germanic philology and literature; the Curt Wachsmuth Collection of Greek and Roman literature, archaeology, and history; the Mount Vernon Collection on political history, international law, and the social sciences; a representative collection of Spanish American books, the gift of the governments of Hispanic America; and the Chauncey Mitchell Depew Public Speaking Collection.

Information concerning the use of the Libraries may be obtained at the Library service desks. A classified list on cards of selected recent acquisitions is available

at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibits are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given in the required English courses, and by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Inter-library loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

ADMISSION

The University accepts both men and women. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone: FE 8-0250, extension 344. The application for admission, with a $15 application fee and a recent, signed photograph, should be returned to the Office of the Director of Admissions.

Application for admission or readmission for degree candidacy, together with all required credentials, should be received by July 1 for the fall semester, January 1 for the spring semester, or May 1 for the Summer Sessions to insure consideration.

No application will be considered after September 1 for the fall semester, January 10 for the spring semester, or June 1 for the Summer Sessions except in extraordinary circumstances, at the discretion of the Director of Admissions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal, with the request that the completed form be mailed directly *to the Office of the Director of Admissions.*

An applicant who has attended one or more institutions of higher learning must request each registrar to mail directly *to the Office of the Director of Admissions* a transcript of his record, *even though credits were not earned.* If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Office of the Director of Admissions.

TEST INFORMATION

The requirement of tests for Columbian College of Arts and Sciences and School of Engineering and Applied Science applicants coming directly from secondary school is specified in the entrance statement of these divisions. The appropriate report of the Graduate Record Examination, when available, should accompany application for admission to graduate degree candidacy.

Arrangement for tests is the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, not less than one month before the date of the test. The Bulletin of Information, obtainable without charge, contains descriptions of the tests as well as rules regarding applications, fees, reports, and the conduct of the tests; lists of examination centers; examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington 6, D. C.

College Entrance Examination Board tests are given at a large number of examination centers throughout the United States, including Washington, D. C.

If the Committee on Admission and Advanced Standing prescribes other tests, necessary instructions will be sent to the applicant by the Director of Admissions.

ADVANCED STANDING

Credit for Advanced Placement Examinations

Up to 30 semester hours of credit may be granted for college-level courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, N. J.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the courses of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

Credit from Higher Institutions

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University. It may be allowed provisionally, and it may be withdrawn for subsequent poor work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

The student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of the Director of Admissions. (See closing dates for application for admission, page 18). If he applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

TRANSFER WITHIN THE UNIVERSITY

For information concerning transfer from one college, school, or division to another within the University, see page 54.

ENTRANCE REQUIREMENTS*

Good character and an academic background appropriate for the program of studies contemplated are required.

* Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

LOWER DIVISION

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units* which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

2. The principal's statement that the applicant is prepared to undertake college work.

3. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test. Applicants are urged to submit scores on two additional achievement tests in subjects reflecting their major interests.

It is recommended that the examinations be taken in December or January. Scores on tests taken in the Junior year may be submitted. Arrangement for tests should be made with the Educational Testing Service, 20 Nassau Street, Princeton, N. J., not less than one month before the date of the test. In applying for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington 6, D. C.

The Committee on Admission and Advanced Standing will consider the adequacy of the qualifications of an applicant who, because of unusual circumstances, does not present all the formal requirements stated above. The Committee may prescribe appropriate tests.

UPPER DIVISION

Bachelor of Arts.—Sixty-four hours of academic work based on the *Arts and Letters* curriculum in the lower division, or the equivalent (see page 67).

Bachelor of Science.—Sixty-four hours of academic work based on the *Science* curriculum in the lower division, or the equivalent (see pages 67 and 68).

Bachelor of Science in Medical Technology.—Sixty-four hours of academic work including Biology 1–2†, Chemistry 11–12, and Microbiology 112, or the equivalent (see pages 67 and 68).

GRADUATE DIVISION

An approved Bachelor's degree from an accredited higher institution; an appropriate distribution of courses; and a superior quality of work in the major field are required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he may be required to submit scores on the Graduate Record Examination or take extra work.

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* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

† An interdepartmental course offered by the departments of Botany and Zoology.

Applications for admission must be approved by the department and by the Dean.

Master of Arts.—A Bachelor of Arts degree at this University with a major in the chosen field, or the equivalent.

Master of Science.—A Bachelor of Science degree (Columbian College) at this University with a major in the chosen field, or the equivalent.

Master of Fine Arts (1) *in the field of Painting or Sculpture.*—A Bachelor of Arts degree at this University with a major in drawing and painting, sculpture, or commercial art, or the equivalent. (2) *In the field of Dramatic Art.*—A Bachelor's degree from an accredited college or university. Desirable undergraduate background includes courses in literature, drama, and the theater. Applicants with academic deficiencies may be enrolled in the program subject to the satisfactory completion of prescribed courses.

SPECIAL STUDENTS

Some students not immediately eligible for unqualified degree candidacy may be admitted as special students to demonstrate ability in a prescribed program, or to make up whatever deficiencies may exist.

The schedule of a special student is made up of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Adviser. If the undergraduate student has not completed the language requirements of his chosen curriculum at the time of admission, he must include 3 semester hours of language in each 12 hours of work until the requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

All special students are expected to consult with an adviser in Building P at least twice a semester.

Upon satisfactory completion of the prescribed program, the student is automatically assigned full status in the appropriate (lower, upper, or graduate) division of the College. Work satisfactorily completed as a special student is normally applicable to the appropriate degree at the undergraduate level.

The terms of admission of a student attempting to qualify for graduate degree candidacy specify the amount of work applicable to the degree program if the student is later admitted to candidacy.

A student at the undergraduate level who fails to maintain a quality-point index of 2.00 may be dropped.

THE GRADUATE COUNCIL

Doctor of Philosophy.—Acceptable personal qualities and the capacity for creative work are required, together with a Bachelor's degree with a major in the proposed field or the equivalent, for provisional status; or one year of acceptable graduate work, for full status.

THE SCHOOL OF MEDICINE

Doctor of Medicine.—Well-qualified candidates are eligible for admission after completing 90 semester hours, or the equivalent, applicable toward a degree in an approved college. However, the majority of applicants are better prepared for the

study of medicine after four years of college work. Applicants are required to take the Medical College Admission Test, sponsored by the Association of American Medical Colleges, in advance of the year for which application is made. Specific required courses are:

Biology (including 4 hours of laboratory)	8
A course in either general biology or zoology	
Chemistry:	
Inorganic (including 4 hours of laboratory)	8
Qualitative analysis may be counted as part of this requirement.	
Organic (including laboratory)	6–8
The equivalent of a one-year college course	
English Composition and Literature	6
Physics (including at least 2 hours of laboratory)	8

Except for these requirements applicants are urged to follow personal interest in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to to take courses that appear to cover subject matter in the medical program.

ADVANCED STANDING

A student who has satisfactorily completed part of the requirements for the degree of Doctor of Medicine may apply for advanced standing if his work has been equivalent to that required by The George Washington University School of Medicine. Before final admission to the third year class, the applicant must have passed Part I of the National Board Examinations.

SELECTION PROCEDURES

The Committee on Admissions is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed only by invitation of the Committee.

Each applicant is notified of the Committee's decision as soon as possible.

An applicant who is offered a place in a class must notify the Director of Admissions, within two weeks, of his intent to accept the place reserved for him and must remit a deposit of $100 not later than January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

Forms for a report on physical condition accompany the offer of a place in class. This report must be completed and returned to the Director of Admissions by the applicant's physician within two months of receipt of the letter of acceptance.

THE NATIONAL LAW CENTER

THE LAW SCHOOL

Bachelor of Laws.—An approved Bachelor of Arts or equivalent degree from an accredited college or university; a satisfactory quality of work; and an acceptable distribution of courses are required. Eligibility is based on personal and scholastic records and on the result of the Law School Admission Test. No applicant will be accepted who is ineligible to return in good standing to a previously attended law school. From the applicants, a selection is made by the Committee on Admissions.

Information concerning the Law School Admission Test may be obtained from the Dean of the Law School or from the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

Advanced Standing

Advanced standing toward the degree of Bachelor of Laws is granted for work successfully completed in other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association. Transferred credits will not be recognized in excess of those which might be earned in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Unclassified Students

A degree candidate with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student to earn credits for transfer to the other law school.

THE GRADUATE SCHOOL OF PUBLIC LAW

Candidates must be accepted by the Faculty of the School.

Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university* and a Bachelor of Laws or equivalent degree from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that at the discretion of the Faculty applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law or for credits earned at another law school. Credits earned as an unclassified student will not be applicable toward meeting the requirements for the degree unless specific provision therefor is included in the letter of admission.

Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university*; a Bachelor of Laws or equivalent degree, earned with high rank, from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association; and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools or a law school ap-

* The Dean is authorized to make exceptions in appropriate cases.

proved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this School.

Continuing Legal Education Students

A simplified admission and registration procedure is used for members of the bar who desire to take courses on a noncredit basis. Continuing Legal Education students may not participate in student activities or benefit from the medical privileges of the University.

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Good character and an academic background appropriate for the program of studies contemplated are required.

FOR UNDERGRADUATE STUDY

For the Engineering Technologist Certificate and the Degree of Bachelor of Science.—Admission is based on the following factors:

1. An acceptable certificate of graduation from an accredited high school showing at least fifteen units*
2. The principal's statement that the applicant is prepared to undertake college work
3. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test, English Composition Achievement Test, and a Mathematics Achievement Test. If the applicant studied trigonometry in high school he should take the Advanced Mathematics Achievement Test; if he did not study trigonometry in high school, he should take the Intermediate Mathematics Achievement Test. (For details, see pages 18 and 19.)

The qualifications of applicants who, because of unusual circumstances, do not meet the above requirements will be considered by the School, which may prescribe admission tests.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. General science may not be counted in satisfaction of the science requirement but may be counted as an elective unit.

It is recommended that *both* physics and chemistry be studied in high school. Study of these sciences contributes to the student's general education, aids in his choice of a career, and affords a qualitative measure of his ability and potential for study of engineering or science. Superior students are encouraged to begin collegiate study at the highest level consistent with their preparation, by the use of waiver examinations.

The study of solid geometry is recommended, in order that the student may have a firm foundation for his collegiate studies in mathematics.

Quantitative Deficiency.—A graduate of an approved high school who does not offer for admission the particular subjects required, but who does present not less

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

than fifteen acceptable units, may be admitted to pursue a prescribed program of studies including courses to make up for deficiencies if the deficiency in distribution does not exceed two units.

Advanced Standing

Credit for Advanced Placement Examinations.—Advanced standing may be granted for study at the collegiate level in advanced courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced College Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the course of study completed by the applicant.

Total credit that may be so granted is ordinarily limited to 15 semester hours, not more than 8 semester hours of which may be in any one examination area. In exceptional cases, these limits may be exceeded, but in no case will the credit granted exceed 30 semester hours.

Credit from Higher Institutions.—Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

FOR GRADUATE STUDY

Master of Engineering Administration or *Master of Science.*—Admission to graduate study requires a Bachelor's degree from a recognized institution and the capacity for productive work in the field selected.

Applicants who have significant deficiencies in their preparation may qualify for admission to graduate study by taking prescribed undergraduate courses.

In some cases such study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree.

For Degree Candidacy

Master of Engineering Administration or *Master of Science.*—Application for admission to candidacy must be made in writing to the Dean. For details see "The Master's Degrees" in the section of this Catalogue devoted to the School of Engineering.

Doctor of Science.—For admission the student must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. The applicant must have capabilities and interests beyond the ability to assimilate organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation or experiment are necessary to the successful applicant.

THE SCHOOL OF PHARMACY

Bachelor of Science in Pharmacy.—The satisfactory completion of the *Pharmacy* curriculum in the lower division of Columbian College of Arts and Sciences (see page 69), or the equivalent.

A student who has a Bachelor's degree from an accredited institution or who has completed work in the general cultural or foundational subjects of the pharmacy curriculum may be admitted to advanced standing. No more than one year of advanced standing will be granted a student from any institution other than an accredited college of pharmacy.

THE SCHOOL OF EDUCATION

FOR THE BACHELOR'S DEGREES

*Bachelor of Arts in Education, Bachelor of Science in Home Economics**, and *Bachelor of Science in Physical Education.*—The satisfactory completion of the appropriate curriculum in the lower division of Columbian College of Arts and Sciences (see pages 69–70); the equivalent from another accredited higher institution; or a certificate of graduation from an approved normal school or the equivalent is required. With the exception of Home Economics, applicants must have personality traits that give promise of success as a teacher.

FOR THE MASTER'S DEGREE

Master of Arts in Education.—To be admitted to candidacy for this degree the applicant must: (1) hold a Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (*C*+ average); (3) have demonstrated a genuine interest in teaching; (4) have personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are required.

FOR THE ADVANCED PROFESSIONAL CERTIFICATE

Advanced Professional Certificate.—The degree of Bachelor of Arts in Education or the degree of Bachelor of Science in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree from an accredited institution of higher learning; at least two years of successful teaching experience; and a permanent teaching license.

FOR THE DOCTOR'S DEGREE

Doctor of Education.—The degree of Master of Arts in Education, or the equivalent, and at least three years of satisfactory educational experience.

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* Open only to students enrolled in the Home Economics curriculum of the lower division of Columbian College of Arts and Sciences as of September 1961 or earlier or students who transfer from other accredited institutions with enough acceptable credits to permit the completion of the Home Economics degree requirements by June 1965. This degree will be conferred for the last time June 1965.

THE SCHOOL OF GOVERNMENT, BUSINESS AND INTERNATIONAL AFFAIRS

FOR THE BACHELOR'S DEGREES

Bachelor of Arts in Government.—The satisfactory completion of the *International Affairs* or *Public Affairs* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 71 and 72), or the equivalent.

Bachelor of Business Administration.—The satisfactory completion of the *Accounting and Business Administration* or the *Business and Economic Statistics* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 70 and 71), or the equivalent.

FOR THE MASTER'S DEGREES

A Bachelor's degree from an accredited college or university is required.

Students admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in the relevant undergraduate fields.

Master of Arts in Government

In the field of Public Administration.—An undergraduate major in a social science or business administration, or equivalent work experience.

In the field of Public Affairs.—An undergraduate major in public affairs, economics, history, or political science, depending on the field of specialization.

In the field of International Affairs.—The applicant's undergraduate program should include background courses corresponding to an undergraduate major in international affairs at this University.

In the field of Economic Policy.—An undergraduate major in economics at this university, or the equivalent.

In the field of Business and Economic Statistics.—An undergraduate major in business and economic statistics, or the equivalent.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

Master of Business Administration

In the field of Accounting or *Business Administration.*—A Bachelor's degree from an accredited college or university.

In the program of automatic data processing appropriate courses in mathematics are required.

In the field of Health Care (including Hospital) Administration.—A Bachelor's degree from an accredited college or university. In the selection of candidates consideration will be given to personal qualifications, aptitude for health care administration, and practical experience.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

Master of Public Administration

In the field of Public Administration.—A Bachelor's degree from an accredited college or university.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

FOR THE DOCTOR'S DEGREES

Doctor of Business Administration.—The degree of Master of Business Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examination in statistics and accounting.

Doctor of Public Administration.—The degree of Master of Public Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examination in two tools of research, chosen as the program dictates.

THE COLLEGE OF GENERAL STUDIES

See the section of this Catalogue devoted to the College of General Studies.

THE DIVISION OF UNIVERSITY STUDENTS

A person not working for a degree at this University will be considered for admission to the Division of University Students to take courses for which he has adequate preparation, as determined by the departments concerned.

If a student currently or previously registered in the Division of University Students applies for admission to degree candidacy, a maximum of 45 semester hours of credit will be considered for assignment, in so far as these credits are appropriate toward the degree sought.

In special instances, with the permission of the instructor, a person may be considered for admission as an auditor in a class without being required to take active part in the exercises or to pass examinations, but no credit will be allowed for such attendance.

SCHOLASTIC RECORDS

Scholastic records are required of

1. An applicant who graduated from high school within the previous two calendar years. Such an applicant must meet the following requirements for admission to Columbian College of Arts and Sciences.

   a) An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units* which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory math-

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

ematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

b) The principal's statement that the applicant is prepared to undertake college work.

c) College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.

2. An applicant who has been subject to any form of academic or disciplinary action at any college or university within the previous calendar year.

Scholastic records may be required of

1. An applicant who has attended any college or university during the previous calendar year.
2. A former student of this University who was on probation or suspended and, since then, has attended another college or university.
3. An applicant who has *ever* been subject to academic or disciplinary action.

When scholastic records are required, a student may be admitted for one semester or summer term only, pending receipt of records and under provisions stated by the Office of the Director of Admissions.

THE DIVISION OF AIR SCIENCE

The applicant must be a regularly enrolled, full-time, student; at least fourteen years of age; a citizen of the United States; physically fit; of good character; and a candidate for a Bachelor's degree.

CLASSIFICATION OF STUDENTS

Regular Students.—Regular students are those who have met the entrance requirements for candidacy and are registered for degrees.

Special (or probational or provisional) Students.—Special (or probational or provisional) students are those who are in the process of qualifying for admission to curricula in degree-granting colleges and schools of this University.

University Students.—Persons not seeking degrees, as specified in the rules of the Division of University Students, may be admitted to this Division to pursue courses for which they have had adequate preparation.

Additional information concerning curricula, courses offered, entrance requirements, or admission procedure may be obtained from the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone—FEderal 8-0250, extension 344.

*REGISTRATION**

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions (see "Admissions", pages 18–29).

A student previously registered in the University who was not on-campus during the immediately preceding semester (summer sessions excluded), must apply for re-admission in the Office of Admissions (see page 19).

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration.* Allowance for credit for work done concurrently at another institution will be at the discretion of the appropriate committee.

TIME AND PLACE OF REGISTRATION

Registration for all colleges, schools, and divisions except as listed below is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester,* September 19 and 20, from 12:00 to 8:00 P.M.; September 21, from 10:00 A.M. to 1:00 P.M. *Spring semester,* January 30 and 31, from 12:00 to 8:00 P.M.; February 1, from 10:00 A.M. to 1:00 P.M.

For the Law School and the Graduate School of Public Law: Stockton Hall, 720 Twentieth Street, NW., days and hours as listed above.

For the School of Engineering and Applied Science: Tompkins Hall, 725 Twenty-third Street NW., days and hours as listed above.

For the School of Medicine: School of Medicine, 1335 H Street NW., September 12, 10:00 A.M. to 4:00 P.M.

For the College of General Studies: at times and places designated in individual course announcements.

REGISTRATION CHANGES AND WITHDRAWALS

For regulations governing changes in registrations and withdrawals, see pages 32, 33–34, 53–54.

* For "In Residence Status", see page 32.

FEES AND FINANCIAL REGULATIONS

Fees paid by students cover only a portion of the cost of instruction and of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

By authorization of the Board of Trustees, the following fees have been adopted for the academic year 1963–64.

Tuition Fees

For undergraduate and Master's study in Columbian College of Arts and Sciences; the School of Pharmacy; the School of Education; the School of Government, Business, and International Affairs; the Division of Air Science

Full-time program (12 to 18 hours), each semester*	$550.00
Part-time program or hours in excess of 18, for each semester hour	36.00

School of Engineering and Applied Science:

Undergraduate study:	
Full-time program (12 hours or more), each semester	600.00
Part-time program, each semester hour	40.00
Master's study, including comprehensive examination†	1,100.00
Doctor of Science:	
For work leading to and including the qualifying examination	1,200.00
For work leading to and including the final examination	1,200.00
School of Medicine, for the academic year	1,450.00

Registration is for the academic year. The registered student is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause.

National Law Center:

Law School (Bachelor's study):	
Full-time program (11 hours or more), each semester	500.00
Part-time program, each semester hour	36.00
Graduate School of Public Law:	
Master's and Continuing Legal Education study:	
Full-time program (11 hours or more), each semester	500.00
Part-time program, each semester hour	36.00
Doctor of Juridical Science, including the final examination	1,200.00

Doctor of Philosophy‡, Doctor of Education§, Doctor of Business Administration§, or Doctor of Public Administration§:

For work leading to and including the general examination	1,200.00
For work leading to and including the final examination	1,200.00

Division of University Students, for each semester hour:

For courses in Engineering and in Applied Science	40.00
For all other courses	36.00

* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered "in residence" during this period. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† Any student admitted to Master's study may elect to pay the total fee at the beginning of his program or on a course-by-course basis at $40 a semester hour until the total fee is paid.

Students completing payment of the total fee before completion of the required work (including thesis and comprehensive examination) will be granted registration on an "in residence—no charge" basis for one semester immediately following the semester in which tuition payment is completed.

Students requiring additional time for completion of required work after completion of payment of the total fee and the expiration of a semester "in residence—no charge" must register "in residence" each semester and pay the normal "in residence" fee.

‡ The tuition fee is to be paid at the rate of $300 a semester or in full at the beginning of each stage of the doctoral discipline. No residence fee will be charged if a third year is needed for completion of either part of the degree requirements.

§ This fee does not cover the cost of courses numbered 1 to 100.

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

Associate in Arts, Associate in Science, or Engineering Technologist Certificate	10.00
Bachelor's, Master's, Doctor's degrees	25.00
Advanced Professional Certificate in Education	25.00
Fee for Binding Master's Thesis	6.00
Fee for Printing Summary of Doctoral Dissertation	85.00

Special Fees

Application fee (degree candidate), nonrefundable	15.00
Application fee, Unclassified Students in the Law School or the Graduate School of Public Law, nonrefundable	5.00
Application for room reservation fee	100.00
Admission tests (when required)	6.00–12.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in Columbian College of Arts and Sciences; the School of Engineering and Applied Sciences; the School of Government, Business, and International Affairs; or the College of General Studies at the time of registration for the final semester of study (excluding summer sessions)	10.00
Late-registration fee, for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee, for "leave of absence" status for the academic year in the School of Medicine	50.00
Residence fee, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements*. Due and payable on the official days of registration:	
In Columbian College of Arts and Sciences; the Law School; Graduate School of Public Law; School of Pharmacy; School of Education; School of Government, Business, and International Affairs	36.00
In the School of Engineering and Applied Sciences. (See † footnote on page 31)	40.00
For special physical examination	2.00
Special fee, Law School (Student Bar Association activities, *Law Review*, and other services), charged each student in the Law School (except students registered "in residence") for each semester or any part thereof except the summer term	10.00

* Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

Engineers' Council fee, charged each student in the School of Engineering and Applied Science for each semester or any part thereof except the summer term	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
English test for foreign students (when required)	5.00
Laboratory checkout fee, for failure to check out of Chemistry and Pharmacy laboratory by the date deadline set by the instructor	3.00
Transcript fee, for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees are due and payable in advance at the time of each registration.

The student may sign a contract at the time of each registration for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day* in November; one-third on the first working day* in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day* in March; one-third on the first working day* in April.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

A student who fails to meet payments when due, but pays his fees within the following two weeks of the date on which payment is due, is charged a $2 service fee. A student who fails to meet payments within these two weeks after payment is due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a $5 reinstatement fee.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", page 53).

* The University work week is Monday through Friday, inclusive.

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will a refund be made of the first third of the total tuition charges. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry or pharmacy who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a $3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

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* The University work week is Monday through Friday, inclusive.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS, GRADUATE SCHOLARSHIPS, AND ASSISTANTSHIPS

The following fellowships, graduate scholarships, and assistantships are available. Unless otherwise specified, applications should be submitted not later than March 1 preceding the period for which the award is to be made. They should be directed to the chairman of the department or the dean of the school concerned and addressed to The George Washington University, Washington 6, D. C.

University Teaching Fellowships.—Assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to $2,000 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed $600. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the chairman of the department of instruction concerned.

Graduate Teaching Assistantships.—Open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $2,000 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed $730. Application should be made to the chairman of the department of instruction concerned.

Law School Research Assistantships.—Available each year to students currently enrolled in the Law School, preferably to applicants who are completing the second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Graduate School of Public Law Teaching Fellowships.—Available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first-year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Graduate School of Public Law not later than March 15.

American Security and Trust Company Fellowship (1960).—A two-year fellowship of $2,000 a year is available to a graduate student in business administration or economics in the School of Government, Business, and International Affairs.

Winfield Scott Blaney Fellowship in International Affairs (1961).—Bequest of

Jeannette Blaney Strayer in memory of her father. The income from this fund, up to $1,200, is used to provide fellowships for graduate students in a field of international relations, in the School of Government, Business, and International Affairs.

Frederick Albert and Alma Hand Britten Scholarships (1959).—Bequest of Alma Hand Britten to provide tuition aid to incoming graduate students who would not otherwise be able to pursue their studies in the School of Engineering and Applied Science. Scholarships are awarded on the basis of need and scholarship. Application should be made before March 1 for the following academic year. Application forms are available in the Office of the Dean of the School of Engineering and Applied Science.

Thomas Alva Edison Fellowship (1961).—Established through the Patent, Trade-Mark, and Copyright Foundation in the amount of $3,000, this fellowship is awarded annually to a University graduate student who will be expected to follow a program of research approved by a member of the Foundation research staff. Candidates must be qualified to undertake study on the U. S. patent and related systems, and shall be nominated by the University's Patent, Trade-Mark, and Copyright Foundation.

Samuel Jordan Graham Fellowship in Surgery (1961).—By bequest, in memory of Judge and Mrs. Graham. The income from this fund, up to $2,000, may be used to assist students who are pursuing postgraduate study or research, preferably in surgery, at the School of Medicine.

If no individual is conducting such work or deserving of the award, the income may be used to provide one or more scholarships (to cover tuition and other school expenses deemed appropriate) for undergraduate students in the School of Medicine. Application should be made to the Chairman of the Department of Surgery.

Gilbert Grosvenor Teaching Fellowship (1961).—Established by the National Geographic Society in honor of Dr. Grosvenor, an honorary trustee of the University. Awarded to a doctoral candidate in the field of human geography, with stipend up to $1,700 and tuition fee for work leading to and including the General Examination or the Final Examination, as appropriate. Application forms are available in the Department of Geography.

Isabella Osborn King Research Fellowships (1927).—By bequest, fellowships varying in amount from $750 to $3,000 are offered in the biological sciences to foster research for which the libraries and scientific establishments in Washington provide special facilities.

Law School Honor Scholarships (1963).—A limited number of one-year scholarships, each in the amount of $1,500, are available annually to college graduates beginning the study of law in the fall semester. These scholarships are awarded on the basis of outstanding college records, both academic and extra-curricular, need, and demonstrated aptitude for the study of law.

Law School Scholarships.—Available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-year tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Tuition scholarships are also available to continuing second- and third-year full-time students with averages of 75 and above. Applications should be made to the Dean of the Law School prior to July 1. Scholarships are awarded after spring-semester grades are reported.

Robin Miller Research Fellowship (1953).—A $3,000 fellowship established by bequest of Mrs. Robin Miller for the study of cardiovascular diseases.

National Science Foundation Cooperative Graduate Fellowships.—Fellowships at $2,400 for twelve months or $1,800 for nine months, with tuition waived, are available in the mathematical, physical, medical, biological, and engineering sciences and in certain other fields regarded as employing scientific methods. Application should be made to the Graduate Council not later than November 1 for the following year.

National Science Foundation Summer Fellowships for Graduate Teaching Assistants.—Summer fellowships are available at not less than $50 or more than $85 a week for a period of 8 to 12 weeks; tuition is waived. Application should be made to the Graduate Council not later than December 1.

Thomas Bradford Sanders Fellowships (1928).—Fellowships in departments of science, varying in amount from $900 to $1,500 plus tuition, established by bequest of Adie Sanders in memory of her brother.

Scottish Rite Fellowships.—The Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction, U.S.A., offers fellowships each in the amount of $2.200, to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs, to train for government leadership—federal, state, or local. The territory includes the Orients of Alabama, Alaska, Arizona, Arkansas, California, Colorado, District of Columbia, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wyoming, Panama, Puerto Rico, and the Bodies of Taiwan, Japan, Okinawa, and Guam.

These fellowships are made possible by annual gifts and are available to residents of the respective states or countries, and application therefore should be made to the Sovereign Grand Inspector General of the Supreme Council, 33°, of the Southern Jurisdiction, U.S.A., of the Orient state or country from which the application is to be made. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

Wolcott Foundation Scholarships.—Sponsored by the Wolcott Foundation of High Twelve International and available to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs for graduate work in International Affairs, Public Administration, Personnel Administration, or Business Administration. Preference is given to students who themselves are affiliated with, or whose parents are affiliated with, High Twelve International or the Masonic Order. The fellowships cover tuition for one calendar year of graduate study in residence. Where need is shown, a living allowance up to $100 a month may be granted. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work (fifteen semester hours or in the professional schools, the full prescribed schedule) during the period for which the scholarship is awarded.

Scholarship application should be made in writing on or before April first for the following academic year and, unless otherwise specified, should be addressed to the

Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C. Awards are made during the month of April. All scholarships begin with the fall semester.

The following is a listing of the scholarships available to The George Washington University students, the donors who make them possible, and the year each scholarship was instituted at this University.

OPEN TO INCOMING FRESHMAN STUDENTS

The following scholarships are awarded to outstanding members of recent graduating classes of accredited secondary schools. Applicants must be citizens of the United States who are not receiving veterans' benefits under any public law.

Applicants must apply for admission to the University and be accepted before their scholarship applications can be considered. Forms for application for admission to the University are available at the Office of the Director of Admissions, The George Washington University, Washington 6, D. C.

Alpha Zeta Omega Scholarship (1950).—A $500 scholarship, available in $100 amounts at the beginning of each academic year, established by Pi Chapter, awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia, nearby Maryland, or Virginia who intends to complete the requirements for the degree of Bachelor of Science in Pharmacy. Application should be made to the Dean of the School of Pharmacy.

Alumni Scholarships.—Five scholarships are available each year in the lower division of Columbian College of Arts and Sciences, upon recommendation of alumni or regional alumni clubs, to outstanding graduates of accredited high schools outside the Metropolitan area of Washington, D. C. These scholarships provide full tuition for four academic years, beginning with the fall semester (excluding summer work and special fees). The student must maintain a *B* average. For information write to the Director of Alumni Relations. Application should be made to the Alumni Office on or before March 1.

Association of Federal Communications Consulting Engineers Scholarship (1958)[*]. —A full-tuition scholarship, including laboratory fees and books. Available to a student of good character, promise, and leadership working toward the degree of Bachelor of Science (Electrical Engineering) and intending to major in communications.

Frederick Albert and Alma Hand Britten Scholarships (1959).—Bequest of Alma Hand Britten for scholarship aid to needy students preparing for the engineering profession. Application must be made not later than March 1 on forms which are available at the Office of the Dean of the School of Engineering and Applied Science.

Debate Scholarship.—Offered annually to a high school senior who intends to enter the lower division of Columbian College of Arts and Sciences and complete a Bachelor's program at this University.

The award covers full tuition for four academic years (excluding summer work and special fees), provided the holder maintains a *B* average and participates in the official University debate activities.

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[*] This scholarship is renewable and is, therefore, not available each year for award to an incoming freshman.

The scholarship is awarded on the basis of (1) participation in the annual George Washington University High School Discussion Conference and (2) participation in the Annual George Washington University High School Debate Tournament. Promising high school seniors in and outside the Washington Metropolitan Area, who have demonstrated outstanding ability in interscholastic speech activities, will also be eligible for consideration.

Inquiries should be directed to the Department of Speech.

District of Columbia Pharmaceutical Association Scholarship (1954).—A $500 scholarship awarded annually to a member of the graduating class of one of the public or parochial high schools of the District of Columbia, nearby Maryland or Virginia, who intends to complete the requirements for the degree of Bachelor of Science in Pharmacy. Application should be made to the Dean of the School of Pharmacy.

Estella Constance Drane Scholarship (1957).—By bequest, in memory of the boys of the former Washington Business High School who served in World War I. Provides an annual partial scholarship to a graduate of Roosevelt High School.

School of Engineering and Applied Science Scholarships.—Four scholarships are awarded each year to graduates of accredited high schools. Each scholarship provides full tuition for four academic years (excluding summer work and special fees), provided the student maintains an average of *B* and a satisfactory standard of deportment.

Applications must be made before March 1 for the following academic year. Application forms are available in the Office of the Dean of the School of Engineering and Applied Science.

General Motors College Scholarship (1955).—Awarded to an incoming freshman with outstanding talent, high personal qualifications, and financial need. The amount is flexible varying from $200 to $2,000 a year, depending upon the need of the individual. It is renewable for the four years of undergraduate work provided the student continues to meet the high standards established for the holder of this award. Application should be made on or before February 1.

High School Scholarships.—The Board of Trustees offers annually thirty-four scholarships to graduates of accredited high schools in the following Washington Metropolitan areas: District of Columbia; Fairfax-Falls Church; Alexandria City; Montgomery, Prince Georges, and Arlington counties. One of these scholarships, designated as the *Amos Kendall Scholarship*, was established in 1869 by the Honorable Amos Kendall.

These scholarships are awarded to students who intend to enter the lower division of Columbian College of Arts and Sciences and complete a Bachelor's program at this University.

The award covers full tuition for four academic years (excluding summer work and special fees). To retain a high school scholarship, an average of *B* and a satisfactory standard of deportment must be maintained.

Candidates must be indorsed by principals and counselors of participating high schools and reported as nominees to The George Washington University Committee on Scholarships not later than February 1. Direct inquiries to high school counselor.

Levin M. Powell Scholarships (1886).—Full-tuition scholarships, established by bequest, are available annually to young men wishing to prepare for entrance into the United States Naval Academy.

FOR STUDENTS WITH ESTABLISHED ACADEMIC RECORDS AT THIS UNIVERSITY

Applicants for these scholarships, including transfer students, must have completed one semester of work (15 hours minimum) and maintained a *B* (3.0) average *at this University.*

American Foundation for Pharmaceutical Education Scholarship (1950).—Provides annual scholarship aid to a fourth- or fifth-year student in the upper quarter of his class in the School of Pharmacy.

American Society of Women Accountants Scholarship (1953).—Established by the District of Columbia Chapter to provide a partial scholarship for a worthy sophomore, junior, senior, or graduate woman majoring in accounting.

Avalon Foundation Scholarship Fund (1960).—An unrestricted supplement to the scholarship funds of the Medical School, to be expended in conformity with the School's policy and available until expended for nonrefundable grants to students. Scholarship aid from this fund shall be granted "to students on a combined basis of financial need and scholarship attainment." Available 1962–63.

Byron Andrews Scholarship (1920).—A partial scholarship established by Bell Fisk Andrews in memory of her husband. Available to "ambitious and needy students, who desire to pursue courses in English, Latin, journalism, history, literature, or political science".

Anna Bartsch Hospital Intern Scholarship (1946).—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman intern in the University Hospital.

Anna Bartsch Medical Student Scholarship (1946).—A $500 scholarship established by Dr. Anna Bartsch-Dunne, as a memorial to her mother. Awarded to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession".

Beta Sigma Phi Scholarship (1962).—A partial scholarship established by the District of Columbia City Council, available to a full-time woman student enrolled in undergraduate work.

Everett Lamont Bradley Scholarship (1954).—A partial scholarship, by bequest of Alice R. H. Bradley in memory of her son, for a student in the School of Medicine.

Frederick Albert and Alma Hand Britten Scholarships (1959).—Bequest of Alma Hand Britten for scholarship aid to needy full-time graduate or undergraduate students in the School of Engineering and Applied Science, who would not otherwise be able to pursue such professional study. Application should be made before March 1 for the following academic year. Application forms are available in the Office of the Dean of the School of Engineering and Applied Science.

Brooklyn Alumni Club Scholarship Fund (1959).—Established to financially assist a needy student in the School of Medicine.

Emma K. Carr Scholarships (1932).—Fourteen partial scholarships are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship (1896).—A $500 scholarship established by Maria M. Carter in memory of her husband to aid a deserving student who is preparing for the civil engineering profession.

Maria M. Carter Scholarship (1871).—Provides tuition aid to a young man.

Joseph Collins Foundation Scholarships.—Available to medical school students upon application through the Office of the Dean of the School of Medicine.

Colortone Graphic Arts and Publications Scholarship (1961).—An annual $500 scholarship established by Colortone Press for a senior majoring in Journalism.

Mary Covington Memorial Scholarship (1961).—Established by Mary S. English in memory of her aunt, Mary Covington, LL.B. 1922, provides tuition aid to a deserving evening student in the Law School on the basis of scholastic achievement in the first-year course.

Daughters of the American Revolution Scholarship (1952).—A $500 scholarship established by the District of Columbia Chapter. Available to junior and senior students, preferably women, who are descendants of patriots of the American Revolution.

Isaac Davis Scholarship (1869).—Nominations for this tuition aid may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Charles Worthington Dorsey Memorial Scholarship (1947).—Memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82. A full-tuition scholarship for the course leading to the degree of Bachelor of Laws, awarded to a needy and promising graduate of this University with a Bachelor of Arts or equivalent degree. The scholarship is awarded ordinarily once every three years.

Henry Parsons Erwin Scholarship (1955).—Established by Helen B. Erwin as a memorial to her husband, a former Trustee of the University. A partial scholarship for a student in Engineering.

Robert Farnham Scholarship (1871).—Established by Mrs. Robert Farnham. Tuition aid for a student in Columbian College of Arts and Sciences.

Esther Brigham Fisher Scholarship (1951).—Bequest for tuition aid.

Gamma Phi Beta Sorority Scholarships (1962).—Two scholarships covering tuition for a three semester hour course in Education for the Gifted offered annually to certified teachers. Application should be submitted to the Dean of the School of Education.

Georgetown Business and Professional Woman's Club Scholarship (1958).—A partial scholarship for a woman student in the field of science.

Mildred Green Memorial Scholarship Fund (1959).—Established by Alpha Theta Chapter of Pi Lambda Theta, provides annual tuition aid for a student in the School of Education, upon the recommendation of the donor. Application forms are available in the Scholarship Office.

Anna Spicker Hampel Scholarship (1949).—Established by Evelyn Hampel Young in memory of her mother, provides tuition aid for a young married woman in the School of Education or Columbian College of Arts and Sciences.

Elma Lewis Harvey Scholarship (1921).—A partial scholarship established by Emma Elizabeth Harvey in memory of her daughter. Awarded every four years, or as often as vacant, to a young woman in Columbian College of Arts and Sciences of the Protestant faith and the Caucasian race, selected for scholarship and moral qualifications.

Hazelton Scholarship (1950).—An annual partial scholarship, by bequest of Lillie S. Hazelton, "for use and assistance of needy and worthy students."

Howard Henry Howlett Scholarships (1962).—Bequest of Dr. Howlett for scholarship aid to "deserving students" in the upper division of Columbian College of Arts and Sciences.

Robert Woods Johnson Scholarship Fund.—Available to medical school students upon application through the Office of the Dean of the School of Medicine.

Kappa Alpha Theta Scholarship (1950).—A $500 scholarship established by the Washington alumnae for the training of a clinician in speech correction.

Kappa Kappa Gamma Scholarship (1959).—An annual $500 scholarship established by the Washington alumnae for a student planning to follow the profession of speech correction.

Kappa Psi Scholarship (1952).—An annual partial scholarship for a student in the School of Pharmacy, established by Gamma Tau Chapter and the District of Columbia Graduate Chapter of Kappa Psi Pharmaceutical Fraternity.

Ki-Wives Scholarship.—A full-tuition scholarship available to a student or students in the School of Medicine.

Law School Scholarships.—Tuition scholarships available to continuing second- and third-year full-time students with averages of 75 and above. Application should be made to the Dean of the Law School prior to July 1. Scholarships are awarded after spring-semester grades are reported.

Medical Research Scholarships and Traineeships.—For student participation in the research programs of the School of Medicine or special training in research methods. Research scholarships are ordinarily awarded for full-time activity during the summer months; research traineeships support part-time work during the academic year. Scholars are "matched" with members of the faculty in accordance with their mutual interests. Trainees are designated by the departments responsible for the programs. These programs have been sponsored by the National Institutes of Health, the National Foundation, Lederle Laboratories, and Tobacco Industry Research Committee. In addition a number of research scholarships have been made available through the American Cancer Society Institutional grant and the Washington Heart Association.

Eugene and Agnes E. Meyer Scholarships (1952).—A scholarship fund of $3,500, "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

A. Morehouse Scholarship (1861).—Tuition aid for an undergraduate "intending to enter the Christian ministry."

Paul Pearson Scholarship (1940).—Bequest "to be known as the Dr. Paul Pearson award", for tuition aid to a student in the School of Pharmacy.

Chas. Pfizer Medical Scholarship Program (1962).—Established to financially assist a student in the School of Medicine.

Phi Delta Delta Scholarships (1959).—Zeta Chapter of Phi Delta Delta Legal Fraternity (International), provides tuition aid to a woman student in the second year of the Law School, who excelled in scholastic achievement and service to the Law School in her first year.

Phi Delta Gamma Scholarship (1956).—An annual partial scholarship established by Beta Chapter for a woman candidate for an advanced degree.

Prince Georges-Montgomery County Pharmaceutical Association Scholarship (1962).—An annual partial scholarship available to a student enrolled in the School of Pharmacy or a student who has completed the pre-pharmacy requirements at this University or another institution.

Lula M. Shepard Scholarships (1946).—By bequest, two partial scholarships for "worthy Protestant students" wishing to enroll in the International Affairs program of the School of Government, Business, and International Affairs.

Social Security Administration Scholarships (1962).—Established in memory of "Bob" Decola by the Employees Activities Association to provide four undergraduate and one graduate award to cover tuition for one 3-semester-hour course a semester for three semesters. Scholarships are limited to employees of the Woodland, Maryland, Office of OASI.

David Spencer Scholarship (1918).—A partial scholarship established by Louisa J. Spencer. Available under certain restriction.

Ruby Smith Stahl Scholarship (1963).—An annual $1,000 scholarship, available "to a deserving student with proven initiative and capacity for appreciation of educational opportunities in the areas of science, engineering, or pedagogy."

David Perry Steinman Memorial Scholarship Fund (1960).—Established by friends and classmates. Awarded annually to a sophomore in the School of Medicine on the basis of need and academic performance.

Mary Lowell Stone Scholarship (1893).—A partial scholarship available to a woman student of science in Columbian College of Arts and Sciences.

Charles Clinton Swisher Scholarships (1941).—Scholarships of $500 and $300, respectively, by bequest of Professor Swisher. Available under certain conditions, to students of medieval history.

Tau Kappa Epsilon Scholarship (1959).—Established by alumni of the Metropolitan Washington, Virginia, and Maryland areas for annual tuition aid to a member of Tau Kappa Epsilon. If there is no eligible member from the fraternity, the award may be made at the discretion of the Scholarship Committee.

Travelers' Auxiliary of the District of Columbia Pharmaceutical Association Scholarship (1962).—An annual partial scholarship available to a student enrolled in the School of Pharmacy or a student who has completed the pre-pharmacy requirements at this University or another institution.

Tuition Scholarship (1959).—A full-tuition scholarship presented by a friend of the School of Medicine, to be awarded to a worthy student for one year.

University Hospital Scholarships in Medical Technology.—Ten scholarships are available, each to cover the cost of 24 semester hours of the 30 in the last year of the curriculum leading to the degree of Bachelor of Science in Medical Technology. Inquiries should be directed to the Department of Pathology, The George Washington University Hospital.

William Walker Scholarship (1824).—Annual tuition aid for an undergraduate intending to enter the Christian ministry.

Barbara G. Wendt Scholarship (1961).—Established by the Presidential Chapter of the National Secretaries Association (International), of Washington, D. C., in memory of a former member. Annual tuition aid for a student in Secretarial Studies.

John Withington Scholarship (1830).—A partial scholarship established by the New York Baptist Theological Seminary.

Women's Auxiliary of the District of Columbia Pharmaceutical Association Scholarship (1960).—Provides an annual partial scholarship to a woman who is enrolled in the School of Pharmacy or who has completed the pre-pharmacy requirement at this University or another institution. Inquiries should be directed to the Dean, School of Pharmacy.

Ellen Woodhull Scholarship (1919).—Tuition aid for a student in Columbian College of Arts and Sciences.

Zonta Club Scholarship (1950).—An annual partial scholarship for a woman who is a junior, senior, or graduate student with special interest in a professional or business career.

THE COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded to women students on the basis of financial need and scholastic attainment. Applications for these scholarships should be addressed to the Chairman, Columbian Women Scholarships, care of the Alumni Office, The George Washington University, Washington 6, D. C., not later than May 15 for the fall semester, and January 1 for the spring semester. Scholarship aid is awarded from income of the following endowments:

Nellie Maynard Knapp Scholarship Fund (1915).—A fund of $5,000 for tuition aid established in memory of a former president.

Founders of Columbian Women Scholarship Fund (1920).—A fund of $5,000 for tuition aid.

Lillian Young Herron Scholarship Fund (1925).—A fund of $5,000 for tuition aid, named in 1930 in memory of a former president.

Elizabeth V. Brown Scholarship Fund (1925).—A memorial fund of $1,200 for tuition aid, established by the College Women's Club of Washington, D. C., and restricted to the School of Education.

College Women's Scholarship Fund (1926).—A $500 gift for tuition aid established by the College Women's Club of Washington, D. C.

Lewes D. and Myrtie H. Wilson Memorial Scholarship Fund (1926).—A fund of $1,000 for tuition aid established by Elizabeth Wilson as a memorial to her parents and restricted to the School of Medicine.

Grace Ross Chamberlin Scholarship Fund (1932).— A fund of $2,300 for tuition aid in memory of a former president.

Janet McWilliams Scholarship Fund (1954).—A $1,000 fund for tuition aid, by bequest of a former president.

Rose Lees Hardy Foundation Scholarship Fund (1957).—A fund of $2,000 for tuition aid established by an alumna of the University.

Victoria Briggs Scholarship Fund (1959).—A $500 fund for tuition aid, by bequest of Victoria Briggs Turner.

Columbian Women Members' Scholarship Fund (1961).—A $2,000 fund for a woman student in the University.

Arline Hughes Dufour Scholarship Fund (1961).—A $5,000 fund for tuition aid to a woman student.

PRIZES

Alpha Chi Sigma Prizes.—A Handbook on Chemistry and Physics awarded annually by Alpha Pi Chapter to each of three students who carry at least 18 semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry is inscribed on a bronze plaque. The winner must have had at least 16 hours in chemistry including the final semester at this University.

Alpha Delta Pi Prize.—Offered annually by Alpha Pi Chapter to the woman in the junior class with the most outstanding record in scholarship, extracurricular activities, and service to the University.

Alpha Kappa Psi Prize.—A key, awarded annually by Beta Mu Chapter to the male student who has completed 90 semester hours at this University and attained the highest average grade in economics, business administration, public accounting,

public finance, and foreign commerce. The name of the winner and the year of the award is engraved on a plaque in the office of the Dean of the School of Government, Business, and International Affairs.

Alpha Zeta Omega Prize.—A copy of *The United States Dispensatory* is offered annually by the Ladies Auxiliary, Pi chapter, to the student who has completed at least 15 semester hours in the School of Pharmacy and attained the highest average in his courses.

American Institute of Chemists Prize.—A medal and a one-year subscription to *The Chemist* awarded annually to the graduating student, majoring in chemistry, who excels in scholarship, integrity, and leadership.

American Pharmaceutical Association Prize.—The City of Washington Branch offers annually an award to be applied toward an active membership in the American Pharmaceutical Association to the student completing the next-to-last year in the School of Pharmacy who has maintained a high scholastic average and contributed most to the student activities of the School.

Norman B. Ames Memorial Award.—Established by many friends of Professor Ames and awarded annually to a graduating senior of the School of Engineering and Applied Science who is nominated by his fellow students as having made significant contributions to the students in the School of Engineering and Applied Science and to the School and University.

Byrne Thurtell Burns Memorial Prize.—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Martin L. Cannon Memorial Prize.—A copy of *The United States Dispensatory* offered annually by Pi Chapter of Alpha Zeta Omega Pharmaceutical Fraternity to the student completing the pre-Pharmacy curriculum with the highest academic average.

Wilbur J. Carr Prize.—This prize of $200 was established in 1962 by Edith K. Carr, an Honorary Trustee of the University, in memory of her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It will be awarded annually to that man in the graduating class of The George Washington University who has demonstrated outstanding ability in his study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant.

Chi Omega Prize.—Awarded annually by Phi Alpha Chapter to the woman in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

The Columbian Women Prize.—Awarded to the senior woman who in her undergraduate life has most nearly fulfilled the objectives of Columbian Women.

Ernest Connolloy Memorial Award.—Awarded by the Washington Personnel Association to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

John Henry Cowles Prizes.—A first prize of $100 and a second prize of $75, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded

annually to the two seniors in the School of Government, Business, and, International Affairs with the highest academic averages.

DeWitt Clinton Croissant Prize.—Awarded annually to the undergraduate student enrolled in a course in drama or active in University dramatics who submits to the English Department the best essay on drama or the theater.

E. K. Cutter Prize.—Established by Marion Kendall Cutter "for excellence in the study of English." Awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

Isaac Davis Prizes.—Awarded annually to the three seniors who made the greatest progress in public speaking while enrolled in the University. Awards are to be determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class of Columbian College of Arts and Sciences who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Delta Gamma Prize.—Awarded annually by Beta Rho Chapter to the woman who, at the end of her freshman year, has the most outstanding record in scholarship, extracurricular activities, and service to the University.

Delta Zeta Prize.—Awarded annually to the student maintaining the highest average in Biology 1–2.

Elton Prize.—Established by the Reverend Romeo Elton, of Exeter, England, and awarded annually to the student with the highest average in the most advanced course in the Greek language and literature.

School of Engineering and Applied Science Distinguished Scholar.—A certificate awarded annually by the Faculty of the School of Engineering and Applied Science to the senior who graduates with the highest scholastic standing. The student's name is engraved on a plaque displayed in Tompkins Hall.

Jesse Frederick Essary Prize in Journalism.—A prize of $200 established by Helen Essary Murphy and awarded annually to a student who has given promise of sound citizenship and who submits the best printed and published evidence of ability in "forthright reporting" and good journalistic writing, in a student publication or elsewhere.

Joshua Evans III Prize in Political and Social Sciences.—A memorial prize of $100 "established by friends because of an outstanding life." Awarded annually to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows."

Willie E. Fitch Prize.—Established by James E. Fitch in memory of his son. Awarded annually to a senior student for the best examination in chemistry.

Allie S. Freed Prize.—Awarded annually to a member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of Preventive Medicine.

Charles Glover Prize.—Established by Charles Carroll Glover, Jr., a Trustee of the University, in memory of his great-grandfather, an illustrious member of the bar of the District of Columbia. Consists of selected law books. Awarded annually to the student in the Law School who has attained the highest average grade in the third-year, full-time course.

Alice Douglas Goddard Prize.—A memorial established by Frederick Joseph Goddard, of Georgetown, D. C. Awarded annually to the upper-division student making the highest average in American literature.

Edward Carrington Goddard Prize.—Established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of Edward Carrington Goddard, class of '81. Awarded to the junior or senior student making the highest average in the French language and literature.

James Douglas Goddard Prize.—Established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of James Douglas Goddard, class of '01. Awarded to the senior student making the highest average in pharmacy.

Morgan Richardson Goddard.—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C. Awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

Alec Horwitz Prize.—A prize of $100 awarded annually to a senior in the School of Medicine who has demonstrated exceptional proficiency in the field of surgery.

Gardiner G. Hubbard Memorial Prize in United States History.—Established by Gertrude M. Hubbard in memory of her husband and awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Kappa Beta Pi Prize.—A copy of Blackstone's *Commentaries* or a legal dictionary awarded annually by Eta Alumnae Chapter to the woman law student who attains the highest average for the freshman year.

Kappa Kappa Gamma Prize.—Awarded annually to the full-time freshman who achieves the best record in Biology 1–2.

John Bell Larner Prize.—By bequest, a medal is awarded annually to the member of the graduating class in the Law School who attains the highest average grade in the entire course for the degree of Bachelor of Laws or Juris Doctor.

Huron W. Lawson Prize.—A prize of $100 established by Mrs. Lawson in memory of her husband, who was a distinguished member of the Medical Staff of the University, is presented annually to a member of the graduating class of the School of Medicine who has demonstrated exceptional proficiency in the field of obstetrics and gynecology.

Lawyers Title Award.—A $100 prize established by the Lawyers Title Insurance Corporation is awarded annually to a graduating senior for excellence in the law of real property.

Martin Mahler Prize in Materials Testing.—A one-year membership in the American Society for Testing Materials awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—A silver cup awarded annually to the woman student in the sophomore class having an average of *B* or higher and the most outstanding record in activities.

Julius S. Neviaser Prize in Orthopedic Surgery.—A prize of $100 awarded annually to the senior in the School of Medicine who scores the highest grade in a written examination in orthopedics and clinical aspects of orthopedic surgery.

Omicron Delta Kappa Prize.—A plaque awarded annually by Alpha Delta Circle to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities."

John Ordronaux Prizes.—By bequest, $150 awarded annually to the member of the graduating class in the School of Medicine who has the highest scholastic stand-

ing. In the Law School $75 is awarded annually to the student who has attained the highest average grade in the first-year, full-time course; and $75 to the student who has attained the highest average grade in the second-year, full-time course.

Panhellenic Association of Washington, D. C., Prize.—A trophy to be awarded to the Panhellenic Sorority maintaining the highest yearly scholastic average at the University for the previous year.

Phi Delta Kappa Prize.—Awarded annually by Beta Gamma Chapter to the outstanding senior man in the teacher education program in the School of Education.

Phi Eta Sigma Prize.—A choice book selected from the field of the recipient's major, awarded annually by The George Washington University Chapter to the male student attaining the highest scholastic average in his first full semester of work. The winner's name is engraved on a plaque in the Office of the Dean of Columbian College of Arts and Sciences.

Pi Beta Phi Prize.—Awarded annually by the District of Columbia Alpha Chapter to the woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Pi Lambda Theta Prize.—Awarded annually by Alpha Theta Chapter to the outstanding senior woman in the teacher education program in the School of Education.

Psi Chi Prizes.—Two prizes awarded annually to the best undergraduate student in Experimental Psychology and to the graduate student submitting the best Master's thesis in Psychology by The George Washington University Chapter.

Ruggles Prize.—Established by Professor William Ruggles, awarded annually to a candidate for a Bachelor's degree for excellence in mathematics.

Sigma Kappa Prize.—Awarded annually by Zeta Chapter to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—A medal awarded annually by the XI Chapter to the freshman in the School of Engineering and Applied Science who maintains the highest scholastic standing in the work of the entire year.

Society of Colonial Wars in the District of Columbia Prize.—A gold medal awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

Staughton Prize.—Established by the Reverend Romeo Elton and awarded annually to the student making the best record in the most advanced course in the Latin language and literature.

James MacBride Sterrett, Jr., Prize.—Established by Professor Sterrett in memory of his son, consists of the *American Institute of Physics Handbook* awarded annually to the student who obtains the highest average in Physics 14, 15, and 16.

Charles Clinton Swisher Historical Club Prize.—A prize of $100 established by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Swisher, is awarded annually to the student who submits the best essay covering some phase of medieval history.

Theta Tau Activities Plaque.—A plaque awarded annually by Gamma Beta Chapter to the senior in the School of Engineering and Applied Science with the most outstanding record in activities for the entire period of his attendance.

Thomas F. Walsh Prize.—A prize of $150 awarded annually to the student who submits the best essay in Irish history.

Alexander Wilbourne Weddell Prize.—A prize of $350 established by Virginia Chase Weddell in memory of her husband. Awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world." The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

MILITARY AWARDS

Society of American Military Engineers Gold Medal.—Awarded annually to selected Air Force ROTC cadets in the last two years of the engineering course.

National Defense Transportation Association Award.—Awarded to the outstanding senior graduate who qualifies for the Air Force Specialty of Air Transportation Officer or Surface Transportation Officer, in recognition of leadership qualities, academic standing, aptitude for military service, and meritorious achievement in furthering the aims and objectives of the Association in the promotion of preparedness for national defense.

Armed Forces Communications and Electronics Association Gold Medal.—Awarded annually to senior Air Force ROTC cadets majoring in Electrical Engineering for military and academic or nonacademic leadership.

Air Force Association Silver ROTC Medal.—Awarded annually to the outstanding cadet among those who have completed Summer Training and intend to apply for flying training.

Reserve Officers' Association Medals.—Gold, silver, and bronze medals awarded annually to those cadets enrolled in Air Science 101–2, 51 and 52, 21 and 22, respectively, who receive the highest grades for the current year in the leadership and academic phases of the Air Force ROTC course.

Chicago Tribune Gold ROTC Medal.—Awarded each semester to the cadet enrolled in Air Science 151–52 who has contributed most effectively to the Air Force ROTC program by leadership and scholastic excellence.

Chicago Tribune Silver ROTC Medal.—Awarded each semester to the cadet in ROTC Basic Course who has demonstrated outstanding leadership potential and maintained excellent scholastic standing.

Sons of the American Revolution ROTC Medal.—Awarded annually by the District of Columbia Society to the freshman of each Air Force ROTC flight who excels in qualities of good citizenship and meets the requirements prescribed by the donor.

Unit Leadership Trophy.—A silver trophy offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University. Awarded annually to the flight judged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

The Colonial Cadet Rifle Trophy.—Offered by Master Sergeant Jerome Gleason, USAF, first coach of the Air Force ROTC Rifle Team at this University. Awarded to the outstanding member of the rifle team.

Arnold Air Society Scroll.—Offered by the Carl Spaatz Squadron. Awarded annually to the outstanding cadet completing the basic course with a cumulative average of *B* or better in Air Force ROTC courses.

Pershing Rifles Gold, Silver, and Bronze Achievement Medals.—Awarded annually by the National Headquarters to outstanding Pershing Riflemen.

Republic Aviation Award.—An engraved identification bracelet offered by the Re-

public Aviation Corporation. Awarded annually to the cadet enrolled in Air Science 101–2 who, in competition, makes the most effective verbal presentation on the Air Power theme.

The Convair Award.—A Convair miniature airplane offered by the Consolidated Vultee Aircraft Corporation. Awarded annually to the cadet enrolled in Air Science 51 and 52 who achieves the highest cumulative grade in the basic course and who applies for flight training.

Reserve Officers' Association Junior Memberships.—Five junior memberships offered by the Reserve Officers' Association of the District of Columbia. Awarded annually to the five cadets with the highest grades in Air Science 101–2.

National Rifle Association Club Champion Medal.—Awarded to a sophomore, junior, or senior member of the Rifle Team outstanding in marksmanship, participation in team matches, and contribution to the effectiveness of the team.

National Rifle Association Qualification Medals.—Awarded annually to members of the Rifle Team qualifying as Expert, Sharpshooter, or Marksman in indoor rifle firing.

Air Force ROTC Rifle Team Awards.—Trophies, plaques, and medals awarded annually to Air Force ROTC Rifle Teams through successful competition in the following:

The Air Force ROTC Liaison Area Championship Matches
The Army and Area Intercollegiate and Interscholastic Matches
The Secretary of the Air Force ROTC Rifle Match
The William Randolph Hearst National ROTC Rifle Matches.

FINANCIAL AID

STUDENT EMPLOYMENT

Graduate and undergraduate student assistantships are available in several departments of the University. Application should be made to the chairman of the department of instruction concerned.

The Placement Office maintains a registry of positions available in many fields of work and refers qualified applicants for consideration.

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Students in the schools of Engineering and Applied Science, Law, Medicine, and Pharmacy should direct inquiries to and file applications with their respective deans. All other inquiries should be directed to the Office of the Treasurer.

Universty Loan Fund.—The Trustees of the University have made available a fund for short-term loans to students to provide for partial payment of tuition. Application should be made three days prior to the dates on which tuition installments are due.

American Medical Association Medical Education Loan Guarantee Program.—Available to medical school students (beyond the first year of medicine).

Edith K. Carr Medical School Loan Fund.—A fund of $5,000 established by Mrs. Carr for loans to students in the School of Medicine.

Robert M. and Mary McConnel Cooper Law Student Loan Fund.—A fund of $1,000 established by Professor and Mrs. Robert M. Cooper, is available to students

who have completed at least one semester (day or evening) in the Law School and have satisfactory records.

Joseph H. Himes Loan Fund.—A fund of $18,000 is available for loans to students in the School of Medicine.

Home Economics Loan Fund.—A fund of $382 given by the D. C. Home Economics Association, is available for loans to senior girls majoring in Home Economics.

Jephson Educational Trust Loan Fund.—Established by the Jephson Educational Trust Law Center Fund to aid deserving law students in the pursuance of their studies.

Kellogg Foundation Hospital Administration Loan Fund.—A fund of $10,000 for loans to full-time graduate students in hospital administration.

Kellogg Medical School Loan Fund.—A fund of $21,500, established by W. K. Kellogg Foundation in Battle Creek, Michigan, for loans to students in the School of Medicine.

Law Association Loan Fund.—A fund of $2,689, established by the George Washington Law Association, for loans to students in the Law School requiring less than 30 semester hours credit toward the degrees of Bachelor of Laws or Juris Doctor.

Law Class of 1912 Loan Fund.—A fund of $500, established by Charles C. Glover, Jr., is available to students in the Law School who have completed at least one semester (day or evening) and have satisfactory records.

Law Class of 1937 Loan Fund.—Available to students in the Law School who have completed at least one semester (day or evening) and have satisfactory records.

School of Medicine Loan Fund.—A fund of $22,000, contributed by medical students, is available for loans to students in the School of Medicine.

National Defense Student Loan Fund.—This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given applicants who express a wish to teach in elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Treasurer no later than (1) for the *fall semester*—June first for students currently registered in the University and July first for entering students; (2) for the *spring semester*—December first; (3) for the *Summer Sessions*—May first.

Mike Pelekiri Student Loan Fund.—Available to students in the Law School who have completed at least one semester (day or evening) and have satisfactory records.

Pfizer Medical School Loan Fund.—A fund of $1,080, established by Chas. Pfizer & Co., Inc., for loans to students in the School of Medicine.

Benjamin Schoenfeld Memorial Pharmacy Loan Fund.—A fund of $2,309, established by the family and friends of Benjamin Schoenfeld, for loans to pharmacy students.

Sutherland Medical School Loan Fund.—A fund of $1,650, established by Rose L. Sutherland, for loans to students in the School of Medicine.

John Brewster Willis, Jr., Loan Fund in Mechanical Engineering.—A fund of $1,000, established by Mrs. William L. Lane as a memorial to her nephew, John Brewster Willis, Jr., is available to Mechanical Engineering students (graduate or undergraduate) who are primarily interested in aeronautics.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

REGULATIONS

A student enrolled in the University is required to conform to the following University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student suspended for any cause may not attend classes during the period of suspension.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

Grades

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

Graduate.—For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete).

For the grading systems of the School of Medicine, the Law School, and the Graduate School of Public Law, see the explanations in the announcements of those schools.

The Quality-Point Index

Undergraduate.—Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours

for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. Grades in courses taken at another institution are not considered in computing the quality-point index.

Examinations

Examinations are scheduled at the end of each semester or at the completion of the course.

Academic Dishonesty

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate dean's council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

WITHDRAWAL

Withdrawal from a course or from the University requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations", pages 31 and 33–34.)

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases. (See page 116 for regulations governing withdrawal from the School of Engineering and Applied Science.)

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, or Division.—A student may not change or drop courses (see "Withdrawal", above) or change his status to that of auditor except

* The University work week is Monday through Friday, inclusive.

with the approval of the dean of the college, school, or division in which he is registered.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements of the course of study to which the change is made must be met.

Transfer within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the lower division of Columbian College of Arts and Sciences in a regular baccalaureate program, application for transfer must be made to the Director of Admissions on the form provided by his office.

Students wishing to transfer from the Division of University Students to a degree granting college or school of the University should note that a maximum of 45 semester hours will be accepted in transfer.

Students transferring within the University are advised to study carefully the graduation requirements on pages 55 and 56 and to note that in all undergraduate divisions, except the lower division of Columbian College of Arts and Sciences and the College of General Studies, 30 semester hours, including at least *12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill. (For residence requirements in the lower division of Columbian College of Arts and Sciences, see page 65. For information concerning the College of General Studies, see separate bulletin.)

CREDIT

Credit is given only after registration for a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

Transcripts of Record

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

Summer School Credit

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In

no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Freshman and sophomore students in Columbian College of Arts and Sciences (except those enrolled in the Physical Education for men curriculum) are required to take Physical Education 1–2 and 11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Air Force ROTC cadets and a limited number of freshman and sophomore women may substitute Air Science 1–2 and 11–12 for the physical education requirement.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the dean of the college or school in which the student is registered.

Students exempt from the physical education requirement will be required to substitute four hours of elective.

A student entering the University with advanced standing is not exempt from the physical education requirement unless he has satisfactorily met the requirement elsewhere.

The required medical and physical examinations as specified by the departments of physical education, will be arranged at the time of registration.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—It is the student's responsibility to file an application for graduation in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Students expecting to complete, during the Summer Sessions, requirements for degrees to be conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Scholarship.—In all undergraduate divisions of the University the scholarship requirement for graduation is a quality-point index of at least 2.00.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

Curriculum.—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree. (For Air Force ROTC graduation requirements see the Department of Air Science.)

Residence.—Unless otherwise specified, in all undergraduate divisions of the University, *a minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the school or college from which the degree is sought.* This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of the college or school

concerned to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

In Residence Status.—A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his return unless during his absence he maintains "in residence" status by paying the appropriate fee, see page 32.

The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

Graduate Record Examination.—All candidates for Bachelor's degrees in Columbian College of Arts and Sciences; the School of Engineering and Applied Science; the School of Government, Business, and International Affairs; and the College of General Studies are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 14, 1963) for seniors graduating in February, and the Spring Session (April 11, 1964) for those graduating in June. Students expecting to complete degree requirements during the Summer Sessions should take the examination in the Spring Session. Dates of the examinations are announced in the *Schedule of Classes.*

Each senior required to take the Graduate Record Examination must register for it in the office of his dean when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

National Teacher Examinations.—All candidates for the Bachelor of Arts degree in the School of Education are required to take the National Teacher Examinations at one of the three regularly scheduled administrations conducted in February, July, and October. Candidates expecting to graduate in June should take the examinations the previous February. Those expecting to graduate in February should take the examinations the previous July or October.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. A copy of test scores must be forwarded to the School of Education.

Each senior required to take the National Teacher Examinations must register for them in the office of the Dean at least thirty days prior to the date of the administration of the examinations. Details concerning time, place, registration, and fees may be obtained in the Office of the School of Education.

See the announcements of the various schools and colleges in this CATALOGUE for a description of the tests required.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Dissertation.—A thesis or dissertation submitted in partial satisfaction of requirements for a degree, must be presented in its final form to the dean of the college or school concerned no later than the date specified in the University calendar. Three complete copies of each are required. It is the responsibility of the candidate for a graduate degree to obtain from his dean a printed copy of the regulations governing the styling and reproduction of theses and dissertations, which are rigidly enforced.

Accepted theses or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate dean.

Graduation in Absentia.—Application for graduation *in absentia* must be submitted to the appropriate dean.

Honors

With distinction.—In all undergraduate divisions of the University the degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

In the School of Medicine and the Law School, degrees may be conferred "with distinction", at the discretion of the Faculty, on those students who attain an average of *A* on all work taken for the degrees.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.
4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science 101 and 102 with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at an Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished Cadet" badge above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate."

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet"

during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for a Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

The Colleges, Schools, and Divisions

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

THE FACULTY AND STAFF OF INSTRUCTION*

C. D. Linton, *Dean of Columbian College of Arts and Sciences;* G. M. Koehl, *Associate Dean of Columbian College of Arts and Sciences;* R. W. Stephens, *Assistant Dean of Columbian College of Arts and Sciences;* W. L. Turner, *Assistant Dean in Columbian College of Arts and Sciences;* J. C. King, *Assistant Dean in Columbian College of Arts and Sciences*

Professors J. G. Allee, Jr., J. W. Brewer, H. F. Bright, A. E. Burns, Elizabeth Burtner, R. D. Campbell, J. H. Coberly†, C. W. Cole, W. C. Davis, R. H. Davison, V. J. DeAngelis, J. L. Finan, C. E. Gauss, H. L. Geisert, Wood Gray, A. M. Griffin, R. G. Hanken, I. B. Hansen, G. F. Henigan, Jr., P. H. Highfill, Jr., T. W. Holland, Thelma Hunt, Herbert Jehle, E. H. Johnson, F. E. Johnston, E. L. Kayser, J. W. Kendrick‡, R. D. Kennedy, D. C. Kline, G. M. Koehl, W. H. Kraus, J. H. Krupa, Solomon Kullback, J. F. Latimer, Helen Lawrence, C. E. Leese, L. P. Leggette, W. K. Legner, R. M. Leonard, Sar Levitan *(Research)*, C. D. Linton, G. I. Lippitt, T. P. G. Liverman, Kurt London, W. A. MacDonald, H. G. Mandel, G. E. McSpadden, Florence Mears, H. M. Merriman, R. H. Moore, Edith Mortenson, S. C. Munson, W. H. Myers, C. R. Naeser, N. D. Nelson, R. C. Parlett, T. M. Peery, T. P. Perros, C. W. Pettit, E. L. Phillips, J. P. Reesing, Jr.‡, E. M. Renkin, Mary Robbins, Gretchen Rogers, W. F. Sager, R. P. Schlabach, Jr.§, William Schmidt, Wilson Schmidt, E. S. Shepard, J. R. Sizoo, E. L. Stevens, R. B. Stevens, Rafael Supervia, Geza Teleki, I. R. Telford, R. B. Thompson, Kathryn Towne, C. R. Treadwell, F. S. Tupper, B. D. Van Evera, L. A. Vignéras, R. C. Vincent, D. S. Watson, D. G. White, N. A. Wiegmann, R. E. Wood, S. N. Wrenn

Adjunct Professor Carroll Hollis

Professorial Lecturers Stephen Axilrod, Gerhard Colm, Margaret deVries, D. M. Dribin, Grace Evans, H. T. Evans, Jr., Zelda Fichandler, Michael Fleischer, Samuel Greenhouse, Hans Heymann, Jr., Nicholas Hotton, H. F. Hubbard, Margaret Ives, K. C. Kates, W. H. Marlow, F. M. Riddick, L. B. Smith, I. G. Sohn, R. A. Young

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* Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.
† On sabbatical leave spring semester 1962–63.
‡ On sabbatical leave fall semester 1962–63.
§ On leave of absence fall semester 1962–63.

Associate Professors Caroline Adams, F. D. Allan, J. M. Bailey, Otto Bergmann, Lee Bielski, W. E. Caldwell, G. V. Carroll, John Clayton *(Research)*, W. G. Clubb, J. T. Davis, A. H. Desmond, R. E. Gajdusek, J. W. Harkness, R. C. Haskett, C. W. Hill, H. H. Hobbs, Rudolph Hugh, Eva Johnson, R. G. Jones, R. S. Jordan, J. M. Kaper *(Research)*, J. C. King*, H. L. LeBlanc, L. P. Leite†, H. R. Ludden, W. L. Marsh, G. E. Mazzeo, Muriel McClanahan, C. Y. Meade, J. N. Mosél, Benjamin Nimer, J. W. Robb, Carol St. Cyr, R. H. Schlagel‡, L. E. Schlesinger *(Research)*, Mildred Shott, J. W. Skinner, B. W. Smith, Henry Solomon *(Research)*, Loretta Stallings, R. W. Stephens, W. L. Turner, C. E. Tuthill, G. V. Vahouny, R. D. Walk, R. H. Walker, Jr., H. W. Westermann‡, R. C. Willson, Helen Yakobson

Associate Professorial Lecturers H. M. Bain, Jr., Joseph Blum, H. M. Cathey, J. G. Colmen, D. J. Edwards, Edward Haeskaylo, E. E. Harrison, C. D. Kean, Morton Kupperman, H. H. Landon, Jr., C. J. Lindley, R. E. Moor, R. P. Multhauf, Kittie Parker, C. H. Pfuntner, J. P. Pickard, Herbert Rabin, J. I. Robertson, Jr., Robert Sammons, R. S. Sigafoos, Robert Stewart

Assistant Professors Fred Abrams, S. P. Bjorklund, R. R. Bonato *(Research)*, J. M. Campbell, Louise Clubb, C. W. Conner, Dolan Eargle, Jr., Margaret Ethier, J. A. Frey, P. F. Gallagher, A. R. Gassaway, Lyndale George, Lila Ghent *(Research)*, Jacqueline Goodnow *(Research)*, Charles Herber, P. P. Hill, Chiang-Yao Hsieh, S. J. Hunter, R. W. Kenny, Hewitt Kenyon, Carlos Lozano, M. E. Lyon, Vadim Medish, J. L. Metivier, Jr., Margaret Montzka, R. E. Nolan, G. A. Olkhovsky, H. D. Osterle, R. C. Rutledge, K. R. Sanders, R. C. Sentz, W. A. Smith, Jeanne Snodgrass, George Steiner, Klaus Thoenelt, R. E. Thomas, C. S. Tidball *(Research)*, Connie Vaughn, R. Z. Vause, Margret Westecker, Elizabeth Wright, S. S. Yeandle, Jr.

Lecturers E. M. Archer, J. R. Buchheit, W. J. Condell, H. L. Coppenbarger, F. L. Dennis, Milenko Filipovitch-Nikatch, DeWitt Fisher, Irving Friedman, Paul Gekker, Daniel Gottlieb, S. E. Haber, J. M. Harrison, J. V. Hinkel, H. C. Krebs, Richard Lafean, Richard Lahey, Esther Lawton, Florence Lowndes, J. J. Monroe, Mabel Morris, Cynthia Nathan, Margaret Nelson, A. A. Nilles, K. F. Oerlein, J. H. Ott, C. L. Perian, Jack Perlmutter, Louis Robinson, John Ruddley, Alexander Russo, Carmi Schooler, Norman Scribner, A. B. Seidman, Lewis Shollenberger, W. A. Shropshire, Jr., Edwin Shutts, Jessalee Sickman, C. H. Slayman, Jr., T. R. Smith, Edith Surrey, Joseph Taney, J. N. Tevis, Margaret Tolson, J. E. Tompkins, Don Turano, Heinz Warneke, Jane Wickey, Jule Zabawa

Instructors L. D. Bothwell, Dorothy Clark, L. E. Dodd, Arlyn Edelman, M. G. Gallagher, E. N. Harbert, G. P. Huvé, G. C. Landon, Eulogia Llansa, Elizabeth Neyman, R. M. Riggs, R. M. Shirven, F. R. Turaj

Associates Eileen Allen, Booth Beers, R. G. Crawford, Karen Holum, Janet Johnson, G. S. Landau, K. T. Simendinger, J. S. Toomey, Vincent Trofi

COMMITTEES§

LOWER DIVISION

THE DEAN'S COUNCIL‖

1963: W. E. Caldwell, Florence Mears; 1964: G. E. Mazzeo, Elizabeth Wright; 1965: J. M. Campbell, J. W. Harkness

* On sabbatical leave spring semester 1962–63.
† On sabbatical leave fall semester 1962–63.
‡ On sabbatical leave 1962–63.
§ The Dean of Columbian College of Arts and Sciences is a member ex officio of all committees.
‖ Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

J. C. King *(Chairman)*, M. G. Gallagher, Margaret Montzka, Carol St. Cyr, W. A. Smith

COMMITTEE ON SCHOLARSHIP

W. L. Turner *(Chairman)*, R. G. Hanken, J. C. King, Muriel McClanahan, J. L. Metivier, Jr., Edith Mortensen, R. C. Vincent

ADVISORY COMMITTEE

G. M. Koehl *(Chairman)*, M. G. Gallagher, J. C. King, J. H. Krupa, R. M. Leonard, Margaret McIntyre, J. L. Metivier, Carol St. Cyr, Mildred Shott, Loretta Stallings, H. G. Sutton, W. L. Turner, R. C. Vincent

UPPER AND GRADUATE DIVISIONS*

THE DEAN'S COUNCIL†

1963: Gretchen Rogers, W. F. Sager; 1964: R. C. Haskett, C. E. Tuthill; 1965: J. A. Frey, Benjamin Nimer

COMMITTEE ON ADMISSION AND ADVANCED STANDING

R. W. Stevens *(Chairman)*, Edith Mortensen *(Secretary)*, C. W. Cole, J. W. Kendrick, W. F. Sager

COMMITTEE ON THE USE OF CORRECT ENGLISH

R. H. Moore *(Chairman)*, J. G. Allee, Jr., G. F. Henigan, Jr., Muriel McClanahan, R. C. Willson

COMMITTEE ON SCHOLARSHIP

Florence Mears *(Chairman)*, J. A. Frey, H. M. Merriman, J. P. Reesing, Jr., S. N. Wrenn

COMMITTEE ON STUDIES

C. D. Linton *(Chairman)*, A. H. Desmond, H. L. LeBlanc, William Schmidt, F. S. Tupper

COMMITTEE ON LINGUISTIC STUDY

J. G. Allee, Jr. *(Chairman)*, W. G. Clubb, P. F. Gallagher, J. C. King, G. E. McSpadden, N. D. Nelson

INTRODUCTORY

Columbian College was founded in 1821. James Monroe, then President of the United States, aided in obtaining the charter from Congress which established "The Columbian College in the District of Columbia" for the "sole and exclusive purpose of educating youth in the English, learned and foreign languages, the liberal arts,

* The Dean of Columbian College of Arts and Sciences is a member ex officio of all committees.
† Elected by the Faculty.

sciences and literature." Columbian College became Columbian University in 1873. When Congress authorized changing the name to The George Washington University, the name "Columbian College" was given to the college of liberal arts and sciences. In 1961 the name was changed to Columbian College of Arts and Sciences.

Incoming liberal arts and science freshmen and all transfer students of less than junior class standing are registered in the lower division of Columbian College. The lower division also provides the first two years of the prelegal and premedical programs, the preprofessional work required for admission to the schools of Pharmacy; Education; and Government, Business, and International Affairs; and two-year terminal curricula in Accounting, Physical Sciences, and Secretarial Studies. The lower division is primarily concerned with providing (1) the personal and academic guidance needed by beginning college students and (2) the broad cultural foundations in language and literature, science, and social studies on which major field specialization in the upper division is built.

The upper division of Columbian College offers programs leading to Bachelor's degrees in the liberal arts and sciences; the graduate division offers programs leading to the Master's degrees.

Students beginning the first year of graduate study who plan to work toward the degree of Doctor of Philosophy may be given provisional status in the Graduate Council. However, if the student prefers and if the Dean of the Graduate Council so advises, he may register for a Master's degree in Columbian College of Arts and Sciences during the first year and apply for transfer to the Council upon completion of the Master's work.

THE COLUMBIAN COLLEGE PROGRAM

The Columbian College program is a contemporary application of the historic liberal arts tradition. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

REGULATIONS

Regulations regarding Admission, Registration, Fees and Finances *are stated on pages 18–34; other University regulations, on pages 52–58.*

AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a se-

mester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

The student is held responsible for all the work of the course in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations, are met.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor.

USE OF CORRECT ENGLISH

The use of correct English, oral and written, is required in all courses. Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

HONORS

Lower Division Honor Roll.—The name of every lower division student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University is placed on the honor roll and published. To be eligible, the student must have completed no less than 15 semester hours. (A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.)

Dean's List.—The name of every student who makes a quality-point index of 3.50 or higher on a minimum of 15 semester hours of work taken in any one semester is placed on the Dean's List for that semester.

The following scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of 15 semester hours.

PROBATION

A student must maintain a quality-point index of at least 2.00, or be placed on probation. He remains on probation as long as his index is below 2.00. The student whose average is 2.00 or below for work undertaken during this probationary period is suspended. The student whose over-all quality-point index is still below 2.00 but whose average for work undertaken during the probationary period is above 2.00 may be continued on probation by the Committee on Scholarship.

SUSPENSION

A student whose index falls below 1.50 or who is subject to probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors file in the Office of the Dean the names of freshman and sophomore students who are doing work of *D* grade or lower. A notice of Warning is sent to the student and a copy filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

CLASSIFICATION OF STUDENTS

A *freshman* is a student who is in the process of completing 32 semester hours, including 18 hours of his curriculum requirements.

A *sophomore* is a student who has completed between 32 and 64 hours, including 18 hours of his curriculum requirements.

A *junior* is a student who has completed between 64 and 94 hours and filed the declaration of his major, approved by his adviser, in the Office of the Dean.

A *senior* is a student who has completed between 94 and 124 hours, including at least 6 hours of second-group work in his major.

A *master in course* is a student who has satisfactorily completed the work for the Bachelor's degree and filed his approved program of study in the Office of the Dean.

A *special student* is a student not immediately eligible for unqualified degree candidacy but admitted to Columbian College to demonstrate ability in a prescribed program or to make up deficiencies.

THE LOWER DIVISION

ADVISORY SYSTEM

Members of the Faculty, selected for their knowledge of freshman-sophomore requirements and student programs, advise students in making up their programs of study for each semester. A separate staff of experienced advisers under the chairmanship of the Dean assists those students who find it difficult to make adjustments to college life because of scholastic or other reasons. Students who are "warned" or who are on probation may be required to consult these advisers at regular intervals. Students are encouraged to consult any member of the Advisory Staff or their instructors about college problems at any time.

Copies of notices of "warning" or probation are sent to the parents or guardians

of students on request, and the Dean and members of the Advisory Staff are available for consultation with parents or guardians concerning student problems.

Preprofessional Students.—Preprofessional students who intend to transfer after the sophomore year to the School of Education; the School of Pharmacy; or the School of Government, Business, and International Affairs are registered in the lower division to complete the curriculum requirements specified by each professional school. Such students are assigned special advisers to assist them in planning their programs.

SCHOLASTIC-APTITUDE TESTS

Students admitted to the lower division of Columbian College may be required to take the scholastic-aptitude tests of the University.

REQUIRED PLACEMENT EXAMINATIONS

English.—Special placement examinations, required of all entering freshmen, are conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

Foreign Languages.—A standardized placement examination is required of all entering students who wish to continue in college the language begun in high school (French, German, Russian, or Spanish). Upon completion of the examination, assignment is made to the appropriate course.

FIRST- AND SECOND-GROUP COURSES

A freshman or sophomore may not take second-group courses (courses numbered 101–200) without the written permission of the Instructor and of the Dean*. A student is not permitted to postpone a required first-group course in order to take a second-group course for elective credit. The principle that first-group courses must be taken in the freshman and sophomore years, and advanced courses in the junior and senior years in Columbian College and the professional schools, is rigidly adhered to in approving student programs. No freshman or sophomore on probation may take second-group courses without the written permission of the Committee on Scholarship.

THE DEGREES

REQUIREMENTS FOR THE DEGREES

RESIDENCE

The residence requirement for an Associate's degree is 15 hours.

SCHOLARSHIP

A quality-point index of 2.00 is required.

* Students enrolled in the two-year terminal curriculum in Accounting, the Medical Technology curriculum, and the pre-Pharmacy curriculum may take those second group courses which are specified as part of their freshman-sophomore curricula without first obtaining the written permission of the instructor or the Dean.

CURRICULUM

The satisfactory completion of 64 semester hours is required, as outlined in one of the curricula described below.

Except for students intending to apply for the combined degrees of Bachelor of Arts and Doctor of Medicine or the degree of Bachelor of Science in Medical Technology, not more than 12 hours of professional courses may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Lower division students electing professional courses under this rule must obtain the approval of the Dean before registration.

Physical Education.—Freshmen and sophomores (except those enrolled in the Physical Education for Men curriculum) are required to take Physical Education 1–2 and 11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Air Force ROTC cadets and a limited number of freshman and sophomore women may substitute Air Science 1–2 and 11–12 for the physical education requirement.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean.

Students exempt from the physical education requirement will be required to substitute four hours of elective.

A student entering the University with advanced standing is not exempt from the physical education requirement unless he has satisfactorily met the requirement elsewhere.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

Foreign Language.—In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language.

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the requirement by continuing in the same language must take the language placement test (see page 65).

In general, one year of high school language is considered equivalent to one semester of college language.

In some instances foreign languages are required or recommended as preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his lower division program.

English.—Entering students registered in the liberal arts and sciences curricula must follow the sequence of English 1 or 1X, both halves of one of the introductory literature courses, and English 4. This does not apply to students transferring to these curricula or students registering in the preprofessional or vocational curricula.

Examinations for Waiving Curriculum Requirements*

A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department con-

* This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

cerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

I. CURRICULA IN PREPARATION FOR BACHELOR'S DEGREES

Each of the following curricula comprises the first two years of a standard four-year college course.

All curricula in this group lead to the degree of Associate in Arts.

A. UPPER DIVISION OF COLUMBIAN COLLEGE:

1. ARTS AND LETTERS

The following constitutes the first two years of the Bachelor of Arts curriculum:

		Semester Hours
English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Foreign Language	See page 66 for foreign language requirement	12
Physical Education	See page 66 for statement of requirement	4
Science	Biology 1–2*; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; or Physics 11–12	6–8
Social Studies	Economics 1–2; Geography 51, 52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
Elective†		22–24
	Total	64

2. SCIENCE

The following constitutes the first two years of the Bachelor of Science and the Bachelor of Science in Medical Technology curricula. Medical Technology students must include Biology 1–2*, Chemistry 11–12, and Microbiology 112:

English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Foreign Language	French, German, Russian, or nonscience elective	12
	NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4, German 4, or Russian 4 or by special examination.	
Mathematics	Mathematics 3, 6, or electives	6
	NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra, acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	
Physical Education	See page 66 for statement of requirement	4

* An interdepartmental course offered by the departments of Botany and Zoology.
† See footnote (†) on page 68.

		Semester Hours
Science	Biology 1–2*	8
	Chemistry 11–12, Geology 1–2 or 1 and 12, Physics 11 and 12 or 11 and 14	12–14
Social Studies	Economics 1–2; Geography 51, 52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
Elective†		2–4
	Total	64

3. PREMEDICAL

Premedical students may follow either the Arts and Letters or the Science curriculum above in fulfilling the first 60 semester hours of the premedical requirement. Each premedical program must be approved by the premedical adviser.

A minimum of 90 semester hours applicable toward a degree in an approved College of Arts and Sciences including:

Biology (including 4 hours of laboratory)	8
A course in either general biology or zoology	
Chemistry:	
Inorganic (including 4 hours of laboratory)	8
Qualitative analysis may be counted as part of this requirement	
Organic (including laboratory)	6–8
The equivalent of a one-year college course	
English Composition and Literature	6
Physics (including at least 2 hours of laboratory)	8

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimal 90 semester-hour requirement, the majority of applicants are found to be better prepared for the study of medicine after four years of college work.

4. MEDICAL TECHNOLOGY

The degree of Bachelor of Science in Medical Technology is offered by Columbian College in collaboration with the Department of Pathology and the University Hospital. Candidates should follow the Science curriculum in the lower division, including specifically Biology 1–2*, Chemistry 11–12, and Microbiology 112. See pages 77–78 for a description of the course and a statement of further requirements. Specific degree requirements are stated under the Department of Pathology following the listing of the Staff of Instruction.

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* An interdepartmental course offered by the departments of Botany and Zoology.

† It is suggested that electives include one of the following courses: Art 31–32, 71–72; Philosophy 51–52; Religion 9–10, 59–60.

Students enrolled in the Medical Technology program should elect Microbiology 112.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Secretarial Studies; credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

B. SCHOOL OF PHARMACY:

The following constitutes the first two years of the five-year Bachelor of Science in Pharmacy curriculum of the School of Pharmacy.

		Semester Hours
English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Physical Education	See page 66 for statement of requirement	4
Science	Chemistry 11–12, 21, 22; Physics 11, 12; Biology 1–2*	30
Economics	Economics 1	3
Mathematics	Mathematics 3 or elective	3
Elective†		12
	Total	64

C. SCHOOL OF EDUCATION:

1. EDUCATION

The following constitutes the first two years of the Bachelor of Arts in Education curriculum of the School of Education:

English	English 1 or 1X, 2	6
Foreign Language	English 51–52, 71–72, or 91–92 (French, German, Latin, Russian, or Spanish.) See page 66 for foreign language requirement	6
Physical Education	See page 66 for statement of requirement	12
Science	Three semesters (two in biological science and one in physical science or vice versa) to supplement senior high school courses in those fields and chosen from Biology 1–2*; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; Physics 11, 12. (A student offering for admission two or more acceptable senior high school units in the above areas of science may be exempted from one semester of this requirement.)	4
Mathematics	Two semesters to supplement senior high school courses, chosen from Mathematics 3, 6, 9, 10	9–12
Social Studies	History 71–72; Political Science 1 and 9, 1 and 10, or 9–10	6
	Economics 1–2; Geography 51–52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, 9–10; Religion 59–60; Anthropology 1 and Sociology 2. (A student offering for admission two or more acceptable senior high school units in social studies may be exempted from this requirement.)	6
Speech	Speech 1 (or 11, if the Department so advises)	6
Psychology	Psychology 1, 22	3
Electives may be selected in lieu of the various exemptions.		6
	Total	64–67

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

2. PHYSICAL EDUCATION FOR MEN

The following constitutes the first two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

		Semester Hours
English	English 1 or 1X, 2	6
Science	Biology 1–2* (Freshman year)	8
	Chemistry 3–4 (Sophomore year)	8
Social Studies	History 71–72; Political Science 1 and 9, 1 and 10, or 9–10	6
	Anthropology 1 and Sociology 2	6
Major Prerequisites	Physical Education 41, 43–44, 47; Speech 1 or 11 (Freshman year)	10
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		2
	Total	64

3. PHYSICAL EDUCATION FOR WOMEN

The following constitutes the first two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

English	English 1 or 1X, 2	6
	English 51–52, 71–72, or 91–92	6
Science	Biology 1–2*	8
	Chemistry 3–4	8
Social Studies	History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
Major Prerequisites	Physical Education 43–44	4–6
	Physical Education 49, 50	6
	Physical Education 51–52	4–6
	Psychology 1, 22	6
Academic Electives		6–10
	Total	64

D. SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS:

1. GOVERNMENT AND BUSINESS

a) Accounting and Business Administration

The following constitutes the first two years of the Bachelor of Business Administration curricula in Accounting and in Business Administration of the School of Government, Business, and International Affairs:

Accounting	Accounting 1–2	6
English Composition	English 1 or 1X, 2	6
†Foreign Language or Literature	English 51–52, 71–72, 91–92; French 3–4 or 51–52; German 3–4 or 51–52; Russian 3–4 or 91–92; Spanish 3–4 or 51–52	6

* An interdepartmental course offered by the departments of Botany and Zoology.
† This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

		Semester Hours
Mathematics	Mathematics 15–16	6
Science	Biology 1–2*; Chemistry 3-4, 11–12; Geology 1–2 or 1 and 12; or Physics 11–12	6–8
Social Studies	Economics 1–2	6
	Political Science 9–10	6
	Psychology 1	3
	Anthropology 1, Sociology 2, or Psychology 8	3
Statistics	Statistics 51	3
Physical Education	See page 66 for statement of requirement	4
Elective†	(Speech is recommended, students interested in Foreign Commerce include Geography 52)	7–9
	Total	64

b) Public Affairs

The following constitutes the first two years of the Bachelor of Arts in Government curriculum in Public Affairs of the School of Government, Business, and International Affairs:

English	English 1 or 1X, 2	6
Foreign Language	See page 66 for foreign language requirement	12
Mathematics, Science	Biology 1–2*, Chemistry, Geology, Mathematics, Physics, or Statistics	6 to 8
Physical Education	See page 66 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Elective†	(To satisfy minimum required credits)	10 to 12
	Total	64

c) Business and Economic Statistics

The following constitutes the first two years of the Bachelor of Business Administration curriculum in Business and Economic Statistics of the School of Government, Business, and International Affairs:

Accounting	Accounting 1–2	6
Economics	Economics 1–2	6
English	English 1 or 1X, 2	6
Foreign Language	See page 66 for foreign language requirement	12
Mathematics	Mathematics 21, 22, 23	9
Physical Education	See page 66 for statement of requirement	4
Political Science or Philosophy	Political Science 9–10 Philosophy 51–52	6
Statistics	Statistics 51 or 91, 52	6
Elective†		9
	Total	64

2. INTERNATIONAL AFFAIRS

The following constitutes the first two years of the Bachelor of Arts in Government curriculum in International Affairs of the School of Government, Business, and International Affairs:

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
English	English 1 or 1X, 2	6
Foreign Language	See page 66 for foreign language requirement	12
Mathematics, Science	Biology 1–2*, Chemistry, Geology, Mathematics, Physics, or Statistics	6–8
Physical Education	See page 66 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Elective†	(To satisfy minimum required credits. Students interested in Foreign Service include Geography 52.	10–12
	Total	64

II. TERMINAL CURRICULA

In addition to the above curricula, the lower division offers the following two-year terminal courses.

The curricula in Accounting and Secretarial Studies lead to the degree of Associate in Arts. The curriculum in Physical Sciences leads to the degree of Associate in Science.

1. ACCOUNTING

The required work may be completed in two years on a full-time basis or in three years on a part-time basis, with the approval of the adviser.

Accounting	Accounting 1–2, 101, 111, 121–22, 161, 171, 181, 191, 193	33
Business Administration	Business Administration 131, 161, 162	9
Economics	Economics 1–2	6
English	English 1 or 1X, 2	6
Physical Education	See page 66 for statement of requirement	4
Elective	To be selected with the approval of the adviser	6
	Total	64

2. PHYSICAL SCIENCES

This curriculum is designed for part-time students who do not wish to extend their collegiate education beyond 64 semester hours of work. All other students interested in the study of physical science should follow the Columbian College Science curriculum.

Applied Science	Applied Science 3	3
Chemistry	Chemistry 11, 12, 21	12
English	English 1 or 1X, 2, 11	9
Mathematics	Mathematics 3, 6, 21, 22, 23, 24	12–18
Physical Education	See page 66 for statement of requirement	4
Physics	Physics 11, 14, 15, 16	12
Elective	(Speech 1, Economics 1–2 suggested)	6–12
	Total	64

3. SECRETARIAL STUDIES

English	English 1 or 1X, 2	6
	English 51–52, 71–72, 91–92, Russian 91–92	6
Physical Education	See page 66 for statement of requirement	4

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
Secretarial Studies*	Secretarial Studies 1, 2, 11, 12, 15, 16, 51, 54	24
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 1 and 9, 1 and 10, or 9–10, or Anthropology 1 and Sociology 2	6
Accounting	Accounting 1	3
Speech	Speech 11	3
Elective	To be selected with the approval of the adviser	12
	Total	64

UPPER DIVISION

A student with 64 or more acceptable semester hours, whether earned in this University or transferred from another institution, is registered in the upper division of Columbian College. It is assumed that he has met the requirements of the lower division *Arts and Letters* or *Science* curriculum. If he has not, he must begin to make up his deficiencies immediately upon admission and continue to carry courses to this end until all requirements are met.

THE BACHELOR'S DEGREES

Columbian College through its upper division offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Medical Technology.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the upper division of Columbian College. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

For the regulation governing students who are absent from the University for one semester or more, see "In Residence Status", page 56.

CURRICULUM REQUIREMENTS

The curriculum requirements for the Bachelor's degrees include at least 60 semester hours beyond those of the appropriate lower division curriculum and the satis-

* Qualified students, upon the approval of the adviser or the satisfactory completion of a placement test, may waive Secretarial Studies 1, 11, and 12. Other courses, approved by the adviser, will be substituted.

factory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least 24 of the last 60 hours counted toward the Bachelor's degree must be taken in subjects* not included in the major field or department. The student should consult his major adviser at each registration concerning his choice of electives.

Except for premedical and medical technology students, not more than 12 hours of professional courses may be included in the undergraduate program. The election of professional courses must be approved by the Dean's Council prior to registration. Ordinarily courses in Physical Education, Secretarial Studies, and technical courses in Education will not be approved toward a degree.

A change in degree candidacy (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the Dean. The degree requirements effective at the time the change is approved must be met.

Each student must select and file with the Dean a choice of major upon entering the upper division. He may change the major only with the consent of the Dean and of the department or committee concerned, and must meet the requirements for the new major which are in effect at the time the change is approved.

First-group courses may be required as prerequisites to the major, but because of their introductory character they may not be counted as part of such programs. (See "Explanation of Course Numbers.")

Students transferring from other institutions or from other schools, colleges, or divisions in this University with major requirements wholly or substantially met must complete satisfactorily at least 12 semester hours of approved work in the major field in the upper division of Columbian College. This work will count as part of the minimum residence requirement.

Examination for Waiving Curriculum Requirements.—A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

INDEPENDENT STUDY PLAN

A junior or senior of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the department or departments concerned. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction.

GRADUATE RECORD EXAMINATIONS

During the final semester of the senior year students in Columbian College are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities.

* Anthropology, Art, Biology, Botany, Chemistry, Classical Languages and Literatures, Economics, English, Geography and Regional Science, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, Speech, Statistics, Zoology.

The examinations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the summer sessions should take the examination in the Spring Session. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior must register in the Office of the Dean for the Graduate Record examination when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

Bachelor of Arts

The work of the junior and senior years, including a major in one of the following fields, must be approved by the major adviser and by the Dean.

Major Fields.—American Thought and Civilization; Anthropology; Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, (4) Commercial Art, and (5) Ceramics; Biology; Botany; Chemistry; Economics; English Literature; French Language and Literature; Geography; Geology; Germanic Languages and Literatures; History; Journalism; Latin; Latin American Civilization; Mathematical Statistics; Mathematics; Music (1) Music History and Literature, (2) Music Theory, and (3) Applied Music; Philosophy; Physics; Political Science; Psychology; Regional Science; Religion; Russian; Sociology; Spanish American Literature; Spanish Language and Literature; Speech (Speech or Dramatic Art); Urban and Regional Development; Zoology.

Combined Degrees of Bachelor of Arts and Doctor of Medicine.—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements; (2) fulfill the Arts and Letters curriculum of the lower division requirements (see page 98); (3) accumulate 94 semester hours in the liberal arts, including a minimum of 30 in the upper division of Columbian College; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

Bachelor of Science

The work of the junior and senior years, including a major in one of the following sciences, must be approved by the major department or division and by the Dean.

Biological Sciences: Biology, Botany, Zoology. *Physical Sciences:* Chemistry, Geology, Mathematical Statistics, Mathematics, Physics.

THE UNDERGRADUATE MAJOR

There are two types of undergraduate majors: the field-of-study major and the departmental major.

THE FIELD-OF-STUDY MAJOR

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

The *Field-of-Study Major* requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet on each field is obtainable either from the appropriate adviser or from the Office of the Dean. The prospective student should place himself under the direction of the appropriate adviser immediately upon completing lower division work and beginning his junior year.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: American Thought and Civilization, English Literature, French Language and Literature, History, Latin American Civilization, Mathematical Statistics, Philosophy, Spanish-American Literature, Spanish Language and Literature, Zoology.

The major in American Thought and Civilization and in Latin American Civilization involve studies in two areas, those of Languages and Literatures and of Social Sciences. The other Field-of-Study Majors, with the exception of the major in Spanish-American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in English Literature, French Language and Literature, History, Mathematical Statistics, Philosophy, Spanish-American Literature, Spanish Language and Literature, or Zoology must elect a Field-of-Study Major.

Proseminar in the Major

A proseminar is offered in each field to help the student in his reading, study, and laboratory exercises acquire a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student has the privilege of visiting, subject to the ap-

proval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

The Major Examination

The Major Examination will normally be taken at the close of the senior year; a student on a limited schedule may take it no earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Committee on Studies, be reexamined at a later regular major-examination period. The Committee on Studies has general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations are held each semester on dates fixed by the department or departments concerned, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer session.

DEPARTMENTAL MAJORS

Departmental Majors, unlike Field-of-Study Majors, are defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned. The Chairman of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Chairman or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. As far as possible the close student-adviser relationship developed in the Field-of-Study Major will be cultivated also in Departmental Majors.

Departmental Majors are offered in the following: Anthropology; Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, (4) Commercial Art, and (5) Ceramics; Biology; Botany; Chemistry; Economics; Geography; Geology; Germanic Languages and Literatures; Journalism; Latin; Mathematics; Music (1) Music History and Literature, (2) Music Theory, and (3) Applied Music; Physics; Political Science; Psychology; Regional Science; Religion; Russian; Sociology; Speech (Speech or Dramatic Art); Urban and Regional Development.

Bachelor of Science in Medical Technology

In cooperation with the University Hospital and the Department of Pathology of the School of Medicine, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology.

A candidate for this degree must complete the Science curriculum in the lower division, including Biology 1–2*, Chemistry 11–12, 21, and 22; and Microbiology 112; fulfill the Columbian College requirements for degrees, including the residence requirement of at least 30 semester hours; complete the 12-month Medical Technology Course in the University Hospital (see the Department of Pathology), which

* An interdepartmental course offered by the departments of Botany and Zoology.

constitutes the major and prepares students for the national certifying examination given by the Registry of Medical Technologists; and maintain throughout the entire course the scholarship level required for graduation.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. (See page 43.) All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of $65 a month is granted during the last 6 months of the fourth year in training.

Admission to the Columbian College degree program does not assure acceptance in the Hospital program.

For information concerning the Medical Technology Course for students not interested in degree candidacy, see the special bulletin.

THE GRADUATE DIVISION

The graduate division offers programs leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

DEFINITION OF THE MASTER'S WORK

The study leading to a Master's degree is a comprehensive survey of an area of knowledge, usually in the student's undergraduate field, with emphasis on scholarly method.

The student must satisfy certain minimum requirements as to preparation residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field as demonstrated by his thesis and by the results of his Master's examination (together with such other examination involving special skills or techniques as the department or the Committee on Studies may require), is the basis upon which the Master's degree is conferred.

Master of Arts

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History, Anthropology, Art History and Criticism, Biochemistry, Biology, Botany, Chemistry, Economics, English and American Literature, English Literature, French Language and Literature, Geography, Geology, Germanic Languages and Literatures, History, Latin American Civilization, Linguistics, Mathematical Statistics, Mathematics, Microbiology, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, Religion, Religious Education, Sociology, Spanish-American Literature, Spanish Language and Literature, Speech Correction, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Commitee on Studies.

Master of Science

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy, Biochemistry, Biology, Botany, Chemistry, Geology, Mathematical Statistics, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

Master of Fine Arts

Graduate work is offered leading to the degree of Master of Fine Arts in the fields of painting and sculpture (see the Department of Art) and in the field of Dramatic Art (see the Department of Speech).

REQUIREMENTS FOR THE DEGREES

RESIDENCE

Normally, an academic year of residence in the graduate division of Columbian College is required, i.e., completion of a minimum of 30 semester hours of work including the thesis, which is counted as the equivalent of 6 semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than 12 semester hours (which must be approved in advance by the Dean) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. *No part of the minimum requirement may be taken elsewhere.* All work for the degree of Master of Arts, Master of Science, or Master of Fine Arts must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

SCHOLARSHIP

Grades are indicated as *E* (excellent), *S* (satisfactory), *U* (Unsatisfactory), *I* (incomplete).

The grade of *E* must be attained in at least 6 semester hours of the course requirements for the degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the department under which the student is working. A Master's candidate who accumulates 9 hours or more of *U* (including grades of *C* or lower in prerequisite courses) will be automatically suspended.

The symbol *I* (incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" can not be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*.

PROGRAM OF STUDIES

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the appropriate member of the Committee on Studies. The program may be revised, but any change necessitates a repetition of the procedures just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose undergraduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for the Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least 6 semester hours of the course work required for the degree must be taken in courses numbered over 200. Courses numbered between 100 and 200 may be credited toward the degree, if completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers".)

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised to plan his program from the beginning so that work for the lower degree will constitute the initial stage of the doctoral discipline and, upon completion, will admit him to full status in the Graduate Council.

FOREIGN LANGUAGE REQUIREMENT

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one foreign language, selected by the department or committee under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any candidate who chooses to meet the language requirement in French, German, Latin, Russian, or Spanish and has not passed the language examination by the end of 15 attempted semester hours must register for French 49, German 47 or 49, Latin 49 or 50, Russian 47, or Spanish 49, as part of his next registration. The Master's reading examination is given at the beginning and end of each of these courses and, if the course is offered in the summer, at the end of the term. No student will be permitted to take the examination after three unsuccessful attempts. Those enrolled in French 49, German 49, or Spanish 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Spanish, or German should notify the Dean at the time of registration.

Students are reminded of the necessity for early satisfaction of this requirement, normally not later than the end of the first semester of registration for the degree.

ADMISSION TO CANDIDACY

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree, i.e., not later than the completion of 15 semester hours of

degree courses. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or committee and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department or committee, he will not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted toward his degree.

THE THESIS

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and filed in the Office of the Dean by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of 3 hours for each of two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire 6 hours during a single semester. The thesis in its final form must be presented to the Dean, no later than the date announced in the University calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

THE MASTER'S EXAMINATION

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations are held on dates fixed by the department or committee, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer session. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the Committee on Studies, repeat the examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the examination will be permitted.

THE GRADUATE COUNCIL

A. E. Burns, *Dean*

MEMBERS OF THE COUNCIL*

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Assistant Professors J. F. Henderson *(Research)*, Ruth Henderson, Paul Mazel, C. S. Tidball *(Research)*, R. C. Wood, S. S. Yeandle, Jr.

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* The Members of the Council and Consultants in Research for the academic year 1962–63.
† On sabbatical leave spring semester 1962–63.
‡ On sabbatical leave fall semester 1962–63.
§ On leave of absence 1962–63.

GENERAL INFORMATION

INTRODUCTORY

The Graduate Council offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

ADMISSION PROCEDURE

For admission to doctoral work the student must possess adequate preparation for advanced study, together with acceptable personal qualities and a capacity for creative scholarship. Adequate preparation presupposes a satisfactory Bachelor's degree in the same general field as that proposed for doctoral study. Students beginning the first year of graduate study who plan to work towards the degree of Doctor of Philosophy are given provisional status in the Graduate Council. However, if these students wish, and if the Dean of the Graduate Council so advises, they may register for the Master's degree in the liberal arts college (Columbian College of Arts and Sciences) or in the School of Government, Business, and International Affairs during the first year and apply for transfer to full status in the Council upon completion of the Master's degree work.

Application forms may be obtained from the Office of the Dean of the Graduate Council. The form must be filled out completely and returned with the application fee of $15, together with a recent photograph, signed by the applicant. At the time of filing the application, the student should request that transcripts of all previous academic training be sent to the Office of the Dean, together with letters of recommendation. Each application, with transcripts and letters, is examined by a committee which, if the applicant is accepted, constitutes his Consultative Committee. This Committee supervises all aspects of the student's program and work leading to the General Examination.

REGISTRATION PROCEDURE

An applicant, upon receiving a letter of admission from the Graduate Council, is eligible to register at the beginning of the next semester. Doctoral students come directly to the Graduate Council Office to begin their registration process each semester.

THE PLAN OF WORK

The discipline for the degree is divided into three stages. (1) The first year of graduate study constitutes the initial stage, either in the Graduate Council on provisional status, or in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs enrolled as a Master's candidate intending to gain full status in the Council.* (2) Full status in the Council follows comple-

* Students on a part-time basis will normally complete a year of graduate study in two years.

tion of the first year of graduate study and culminates in the General Examination. (3) The final stage is given to research and investigation of a particular project in a special field, the presentation of the findings in a written dissertation, and the Final Examination.

LANGUAGE EXAMINATIONS

French and German are the normally required languages; reading proficiency must be demonstrated by examination. The examinations are arranged through the Office of the Dean. The satisfactory completion of French 49 and/or German 49 meets the language requirement. The Consultative Committee may allow either French or German to be replaced by another language important to the student's research interest. Language examinations may be taken soon after entrance, but the first one must be passed no later than the beginning of the second semester following admission. The second examination must be passed well before completion of work for the General Examination.

THE FIRST YEAR OF STUDY

A student who enters the Graduate Council on provisional status to undertake the first year of graduate study has his program planned by a Consultative Committee. If the first year of work is taken in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs preparatory to gaining full status, Graduate Council advisers aid in planning the Master's program to fit the work into the doctoral program of the student. Upon satisfactory completion of the first year, the student is eligible to apply for full status. Students who have completed a year of satisfactory graduate work at other universities are also eligible to apply directly for full status in the Graduate Council.

STUDY FOR THE GENERAL EXAMINATION

At the beginning of the student's full status, the Consultative Committee is assigned to direct his work in an integrated group of fields of learning, usually five or six in number, deemed necessary to insure his breadth of knowledge, as well as to support the dissertation project in his central field. Members of the Consultative Committee advise the student concerning the scope and content of these supporting fields, and assist him in preparation for his examination in them.

This advanced study in full status does not entail the taking of a second full year of graduate courses and seminars. Additional course work may not be necessary in some cases; in any event, the Consultative Committee determines whether such additional course work is needed, and if so, how much. In this stage of the work the main emphasis in preparation is on conferences with committee members and independent study. Performance in the General Examination is the test of the student's ability to enter upon the final stage of his doctoral discipline.

The examination is a series of written tests usually extending over a period of two weeks. The major portion of a day is given to each part of the examination covering one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a doctoral candidate, to pursue his specialized study and research under the supervision of a member of the Council.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

After the student has been admitted as a doctoral candidate and his research program has been arranged, he is responsible to the member of the Council who directs his research project. The Consultative Committee, in keeping with tradition, goes out of existence with the successful completion of the General Examination. The Committee, however, can make recommendations either to the student or the Research Director, for the period following the General Examination—but cannot impose these as advance requirements. In special instances an advisory committee (which may or may not correspond in personnel with the previous Consultative Committee) may be convened to consider major questions concerning the program of a given student in the period after the General Examination. Generally, such a committee would be named by the Dean at the request of the Research Director. The responsibility for the program between examinations rests with the Director of Research, with the understanding that whenever a Director and Co-director arrangement obtains, that member on the permanent staff of the University shall have final responsibility on matters of policy and program. The Director of Research and the advisory committee may require further course work, where circumstances warrant such action.

The candidate may enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the candidate to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all candidates as evidence of ability to perform scholarly research and to interpret its results. The student's dissertation subject and plan must be approved by the Director and two members of the General Examination Committee, after the General Examination is passed and before his actual research is begun.

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. Printed copies of detailed regulations regarding the form and reproduction of the dissertation and its summary are available in the Office of the Dean. The summaries of accepted dissertations are printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation. Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

When the completed dissertation has been approved by the Director of Research and by two other members of the Council, and submitted to the Office of the Dean, the candidate is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the candidate satisfies the examining commit-

tee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Dean of the Graduate Council.

LITERATURES AND LANGUAGES

American	
(1) Fiction; (2) Literary Nationalism	Coberly
Social Themes in Literature	Walker
English	
(1) Sixteenth Century Drama; (2) Seventeenth Century Drama	Tupper
Seventeenth Century Literature	Reesing
(1) Eighteenth Century Literature; (2) History of English Drama	Highfill
Twentieth Century Literature	Linton
Germanic	
(1) Middle High German Language and Literature; (2) Early New High German Language and Literature	Legner
(1) Old High German Language and Literature; (2) German Romanticism	King
Old Norse Language and Literature	Allee
German Classicism	
(1) German Realism; (2) Twentieth Century German Literature	
Linguistic Analysis	Allee, King
Romance	
Modern Spanish Literature	Alonso
(1) Linguistics; (2) Spanish-American Literature; (3) Spanish Literature	McSpadden
Seventeenth Century French Literature	Protzman
French Literature since 1880	Clubb
(1) Eighteenth Century French Literature; (2) Twentieth Century French Literature	Meade
(1) Nineteenth Century Spanish Literature; (2) Twentieth Century Spanish Literature	Supervía
(1) Spanish-American Literature; (2) Modern Spanish Literature	Robb

SOCIAL SCIENCES

Economics	
History of Economic Thought	A. Burns
Economic Policy	Watson
Economic Theory	Watson, Skinner
International Economics	Schmidt
International Finance	Polak, Young, de Vries

Methodology of Economics	Skinner
National Income	Kendrick, Colm
Public Finance	Colm
Soviet Economics	
Transportation	Kennedy
Geography	
City Planning	Davis, LeBlanc, Westermann, Woodruff
Cultural Geography	Campbell, Mosél
Regional Planning	Campbell, Woodruff
Regional Industrial Development	Davis, Westermann
Regional Science	Campbell, Westermann, Davis
History	
European: Diplomatic since 1815	R. Davison
European: Nationalism	Kayser
European: Russian and Soviet	Thompson
History of Land Legislation	Rasmussen
History of Religion in the United States	
The Modern Near East	R. Davison
Latin American	Davis
United States: Diplomatic	Merriman
United States: (1) Social; (2) Economic	Gray
United States: Political	Haskett
International Relations	
Program includes work in Economics, History, and Political Science	
Sino-Soviet Area	London
Political Science	
Comparative Government and Political Theory	Kraus
International Politics and Organization	
International Politics	Nimer
International Law: (1) War and Neutrality; (2) Arbitration	Brewer
International Relations	Hilsman
International Relations, especially American Foreign Policy	Haviland
(1) The Political Process; (2) Political Controls Over Administrative Agencies	LeBlanc
United States: (1) The Legislative Process; (2) Governmental Organization and Administration	West
Psychology	
Clinical	Hunt, Mercer, Clyde
Comparative	Caldwell
Experimental	Hill, Walk
Personnel Psychology	Mosél
Psychological Measurements	Hunt
Social Psychology	Schlesinger, Tuthill

MATHEMATICAL AND PHYSICAL SCIENCES

Chemistry	
Analytical	Schmidt
Geochemistry	Naeser, Christ
Inorganic	Naeser, Perros, White
Organic	Wrenn
Physical: Kinetics and Electrochemistry	R. E. Wood
Physical: Solubilities	Van Evera
Physical-Organic: Reaction Mechanisms	Sager
Mathematics	
Algebra: Finite Groups	Johnston
Algebra: Matrix Theory	Wiegmann

Analysis: Functional Analysis	Liverman
Analysis: Infinite Series	Mears
Mathematical Logic	Nelson
Physics	
Atmospheric Physics	Clark
Behavior of Electrons in Solids	Hobbs
Biophysics; Theoretical: (1) Quantum Mechanics; (2) Molecular Physics; (3) Relativity	Jehle
Electron Optics	Marton
(1) Experimental Nuclear Physics; (2) Radioactivity	Yeandle
Experimental Biophysics	Gove
Low Energy Nuclear Physics	Bergmann
Theoretical	Frenkiel
Theoretical: Aerodynamics	
Statistics	
Multivariate Analysis	Kullback
(1) Applied: Econometrics; (2) Theoretical: Probability and Sampling	
(1) Psychometrics; (2) Managerial Statistics	Bright

MEDICAL SCIENCES

Anatomy	
Embryology	Allan
Gross Anatomy	Telford
Histology	Telford, Johnson
Neuro-ophthalmology	von Sallmann
Physical Anthropology	T. Stewart
Biochemistry	
Amino Acid Metabolism	La Du, Udenfriend
Animal Nutrition	Briggs
Ascorbic Acid Metabolism	J. Burns
Biochemical Detoxication	Brodie
(1) Carbohydrate Metabolism; (2) Nutrition (emphasis on vitamins); (3) Pathological Chemistry	Roe
Carbohydrate Metabolism	Stetten
(1) Chemistry and Metabolism of Carbohydrates; (2) Biochemistry of Tissue Culture	Bailey
Chemistry and Metabolism of Lipids	Vahouny
Chemistry and Metabolism of Proteins	Carroll
Complex Lipids	Brady
Intermediary Metabolism	Mertz
Lipids	Treadwell
Metabolic Relationships of Insulin	Grant
Protein Metabolism	Rabinovitz
Protein Biosynthesis	Lenhoff
Tissue Respiration	Burk
Microbiology	
Bacterial Physiology	R. C. Wood
Bacterial Physiology and Nutrition	Altenbern
Determinative Bacteriology	Hugh
Immunology	Surgalla, Wright, Parlett
(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis	Griffin
Microbiology	Jacobs
Virology	Robbins, Brown, Weiss
Pathology	
Comparative Pathology	Peery

Pharmacology	
Chemotherapy	Goldin, J. Henderson, Mandel
Drug Metabolism	Axelrod, Cohn, C. Davison, Gillette, Mazel, Mandel
Neurohormones	Udenfriend
Physiology	
Cardiovascular Physiology	Renkin, Leese, Sarnoff
Cellular Physiology	Duryee, Renkin, Hoffman
Endocrinology	Hertz
Gastrointestinal Physiology	Tidball
Membrane Physiology	Renkin, Diecke
Neurophysiology	Diecke, Leese
Renal Physiology	R. Henderson
Psychiatry	
Problems of Treatment (M.D. degree required for admission)	Overholser

BIOLOGICAL SCIENCES

Biology	
Cytology	Bowman
Botany	
Cytogenetics	R. Stewart
(1) Mycology; (2) Plant Pathology	Stevens
(1) Mycology; (2) Plant Physiology: Microorganisms	Hacskaylo
Photobiology	Shropshire
Plant Ecology	Sigafoos
Plant Physiology: Vascular Plants	Cathey
Plant Taxonomy	Parker
Plant Virology	Kaper
Taxonomy	Smith
Zoology	
Entomology: Insect Physiology	Munson
Histophysiology	Desmond
Vertebrate: Embryology and Morphogenesis	Hansen
Vertebrate: Ichthyology	Schultz

POST-DOCTORAL STUDY

The Council expects its graduates to continue their interests in advanced study and research, and to contribute to its program. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual residence fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Dean of the Council. Post-doctoral work taken under this privilege may not be applied toward any degree offered by the University.

REGULATIONS

Regulations regarding Registration, Fees and Finances *are stated on pages 18–34; other University regulations, on pages 52–58.*

RESIDENCE AND CONTINUOUS REGISTRATION

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the General Examination or as a doctoral candidate engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain continuous registration under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student. In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his Consultative Committee or the member of the Council who directs his research. The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

TEACHING FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

A limited number of teaching fellowships are assigned annually to certain departments of instruction open to doctoral students registered in the Graduate Council. In many departments of instruction graduate assistants are appointed to assist in the academic program. Applicants for teaching fellowships and graduate assistantships should inquire directly of the chairman of the department concerned regarding vacancies, details of appointment, and the kind of personal data to be supplied for consideration.

UNITED STATES GOVERNMENT FELLOWSHIPS

The University is participating in the following Government Fellowship Programs: National Science Foundation Cooperative Graduate Fellowships and Summer Fellowships for Graduate Teaching Assistants, and the Fellowships created under the National Defense Education Act. Qualified students should write directly to the Dean of the Graduate Council for information and applications for these Fellowships.

*THE SCHOOL OF MEDICINE**

THE FACULTY

John Parks, *Dean;* A. M. Griffin, *Associate Dean;* A. E. Parrish, *Associate Dean;* C. B. Ethridge, *Director of Postgraduate Medical Education*

Professors H. F. Anderson, R. H. Barter, Brian Blades, T. M. Brown, Paul Calabrisi, C. S. Coakley, R. A. Cox, C. B. Ethridge, A. M. Griffin, C. E. Leese, H. G. Mandel, John Parks, R. C. Parlett, T. M. Peery, E. M. Renkin, Mary Robbins, M. J. Romansky, J. F. Sadusk, Jr., W. W. Stanbro, Harold Stevens, I. R. Telford, C. R. Treadwell, J. W. Watts, C. S. Wise, Leon Yochelson

Clinical Professors W. S. Anderson, L. R. Culbertson, W. A. Howard, W. S. McCune, E. A. W. Sheppard

Associate Professors F. N. Miller, Jr., A. E. Parrish, Clarke Davison

Associate Clinical Professor J. J. MacFarland, Jr.

Assistant Clinical Professor J. L. Levine

Administrator of the University Hospital V. F. Ludewig

COMMITTEES†

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G. F. Kelser, W. P. McKelway, F. N. Miller, J. E. Rankin

COMMITTEE ON EDUCATIONAL POLICY

T. M. Peery, *Chairman*

E. M. Renkin, M. J. Romansky, J. F. Sadusk, Jr., J. G. Sites, I. R. Telford, J. R. Thistlethwaite, C. R. Treadwell

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COMMITTEE ON RESEARCH

C. R. Treadwell, *Chairman*

J. M. Evans, T. N. Johnson, H. G. Mandel, H. C. Pierpont, Harold Stevens

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* Faculty and committee members for the academic year 1962–63.

† The Dean of the School of Medicine and Associate Deans are members ex officio of all committees.

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Mary Robbins, C. S. Wise

COMMITTEE ON GRADUATE AND POSTGRADUATE EDUCATION

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Seymour Alpert, R. H. Barter, Brian Blades, Leon Yochelson, V. F. Ludewig

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ADVISORY COMMITTEE ON REHABILITATION

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J. P. Adams, T. M. Brown, J. M. Evans, Irene Tamagna, J. R. Thistlethwaite

ADVISORY COMMITTEE ON STUDENT AFFAIRS

F. N. Miller, *Chairman*

Seymour Alpert, J. B. Christensen, Ruth Henderson, H. C. Pierpont

GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of The George Washington University was opened in March 1825. Of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 as a part of the organization of the School. The present George Washington University Hospital was opened in 1948, and the Helen L. and Mary E. Warwick Memorial Building housing the Cancer Clinic was completed in 1954. Additional clinical facilities are used at the District of Columbia General Hospital, Children's Hospital, St. Elizabeths Hospital, Mt. Alto Veterans Administration Hospital, Fairfax Hospital, and Washington Hospital Center. The School of Medicine maintains close affiliation not only with the various divisions of the University, but also with the numerous medical research and scientific establishments of the federal government in the Nation's Capital. Washington provides world renowned library facilities, comprehensive museums, and excellent recreational facilities which are available to students.

OBJECTIVES

The purpose of the School of Medicine is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever changing society. It is the responsibility of the School of Medicine to provide its students with a systematic plan of instruction in the basic medical sciences, with well guided clinical experience, with opportunities for expression in research, and with a philosophy in keeping with the highest ethics of the profession.

To achieve these objectives the School of Medicine has developed a progressive plan of instruction and a balanced, comprehensive curriculum. To carry out the program the University maintains a faculty of adequate size and of outstanding ability and makes use of facilities which provide exceptional opportunities for research and clinical training.

PLAN OF INSTRUCTION

The curriculum is a progressive one, beginning with basic medical science and expanding to include the more complex aspects of the prevention of disease and care of the sick. The teaching program is organized under the various departments of the School of Medicine. (See "Courses of Instruction".)

The schedule for the first year begins with an orientation week designed to introduce the new students to the Faculty, to the upperclassmen, and to the environment for their medical education. The students meet for informal panel discussions with upperclassmen and members of the Faculty on such subjects as curriculum, medical terminology, use of library facilities, ethics and aims of the medical profession, and student health.

First year instruction is given in anatomy, biochemistry, and physiology using the classroom and laboratory facilities of the School of Medicine. Early in their medical careers students are encouraged to participate in research.

Having completed the preliminary study of structure and function of the normal body, the student progresses in the second year to a consideration of disease processes and mechanisms. The various microbial agents capable of causing disease are studied in the course in microbiology, and the effect of these and other harmful substances upon the body are studied in the course in pathology. The modes of action of various therapeutic agents are considered in the course in pharmacology. Introductory lectures and demonstrations in the clinical sciences are given during the second semester in order to prepare the student for the responsibilities of the following year.

In the third year the student is assigned to the University Hospital and affiliated hospitals for lectures, conferences, and clinical studies. He serves in the various divisions of the hospital assisting in the preparation of clinical records and performing certain clinical laboratory examinations. He learns to apply diagnostic and therapeutic procedures in the care of patients. During this period instruction is individual or in small groups. The instructor reviews the student's observations at the bedside and guides him in the development and application of his knowledge.

In the fourth year the student's responsibility for inpatient care continues and increases. The University Hospital, the District of Columbia General Hospital, Children's Hospital, Mt. Alto Veterans Administration Hospital, St. Elizabeths Hospital, Fairfax Hospital, and Washington Hospital Center provide the students with experience in many fields. In this final year of formal medical education stress is placed

upon the total patient and his environment so that emotional and economic as well as physical factors may be considered in the restoration of the individual to a state of health and happiness.

Upon satisfactory completion of the four-year course of the School of Medicine, the student is well prepared for graduate training leading to a career in general or specialty practice, research, medical education, or government service.

EQUIPMENT AND FACILITIES

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; biochemistry; microbiology; pathology; pharmacology; and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research and Administration Building.—The Research Building houses special laboratories for graduate and staff research in the departments of Anatomy; Biochemistry; Microbiology; Pharmacology; and Physiology. Special facilities are provided for the study of radioactive compounds, for tissue-culture techniques, and virologic procedures. Qualified students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the west wing is occupied by a modern medical library; the east wing houses the administrative offices of the School of Medicine. Photographic laboratories and other facilities for audiovisual aids to education are on the second floor.

Medical Library.—The Medical Library in well-equipped quarters on the first floor of 1339 H Street NW., contains 26,000 carefully selected volumes, including the new medical works and the principal medical journals.

Interlibrary loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open Monday through Friday, 1:00 to 5:00 P.M. and 6:00 to 11:00 P.M. During the academic year the library is also open Saturday and Sunday from 1:00 to 5:00 P.M.

The George Washington University Hospital.—This 427-bed hospital is staffed and directed by the Faculty of The George Washington University School of Medicine. It provides excellent clinical opportunity for the instruction of medical students. Specialties in the fields of medicine and surgery have assigned space and equipment for the diagnosis and care of ambulatory and hospital patients.

GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of special military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene,

the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

CLINICAL FACILITIES

Students at The George Washington University School of Medicine receive clinical training at the University Hospital, at the University Cancer Clinic, and at affiliated hospitals.

The George Washington University Hospital.—The Medical Director and Chiefs of Services are responsible for the supervision of patient care. The individual student has direct responsibility to patients under supervision. Clinical and clinical pathological conferences are held in which the history of patients, laboratory records, and the physical and pathological findings are presented and correlated.

The University Clinics.—The University Clinics have facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for instruction in the University Clinics.

The George Washington University Cancer Clinic.—The Helen L. and Mary E. Warwick Memorial Building, opened in 1954, houses the Cancer Detection Clinic and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are used for teaching medical students. The diagnosis and treatment of various forms of neoplasms are presented. The results of treatment are evaluated by follow-up studies.

District of Columbia General Hospital.—The District of Columbia General Hospital, one of the ten largest general hospitals in the country, is a teaching facility for students of the School of Medicine.

The hospital has a bed capacity of approximately 1,250. It is the principal facility for the care of the indigent sick of the community. In 1961 the outpatient department had over 151,445 clinical visits. Approximately 200 patients are registered daily in the admitting and emergency service, of whom from 15 to 20 per cent are admitted to the Hospital. This is the largest emergency service in the District, and a great variety of acute medical and surgical problems are examined and treated.

Children's Hospital.—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics on both clinic and inpatient services. Special lectures and clinical work in child psychiatry are given in Children's Hospital.

St. Elizabeths Hospital.—Saint Elizabeths Hospital, established by an act of Congress in 1855, is a federal psychiatric hospital administered under the Department of Health, Education, and Welfare. This Hospital provides for the treatment, care, and general well-being of approximately 8,000 patients. The facility includes a completely approved General Hospital to meet the needs for medical and surgical care and which functions with a full-time staff within the Hospital plus attending physicians in various specialties.

The Hospital maintains an up-to-date medical library.

The medical students of The George Washington University utilize the facilities of Saint Elizabeths for clinical psychiatric training.

The opportunities for research are enhanced by a cooperative arrangement with the National Institute of Mental Health of the United States Public Health Service.

Mt. Alto Veterans Administration Hospital.—This 335-bed hospital, commonly referred to as Mount Alto, is predominantly general medical and surgical, although 33 beds are reserved for the care of neurological and psychiatric patients.

The Hospital is equipped and operates with all modern facilities for care and treatment of patients, including a fully equipped medical library. In addition to its medical, surgical, neurological, and psychiatric facilities, the Hospital is designated to perform specialized treatment in a wide variety of fields. The Hospital also has personnel assigned to, and cooperates closely with, the Armed Forces Institute of Pathology.

Fairfax Hospital.—This 300-bed suburban hospital, which opened February 1961, is a teaching hospital serving an area with an estimated population of 300,000. In addition to its modernly equipped emergency room, outpatient facilities, surgical suites and delivery rooms, and private psychiatric unit, programs are offered for the training of nursing personnel.

Washington Hospital Center.—A 787-bed general hospital which opened in March 1958, combining the facilities of Emergency, Episcopal, and Garfield hospitals. Located in northwest Washington, it serves the entire metropolitan area. A very active emergency service cares for more than 35,000 cases a year. All major clinical services are provided with the exception of pediatrics. In addition to an extensive training program for house officers, the Center offers organized instruction for nurses, laboratory and X-ray technicians, and medical secretaries.

ADMISSION, REGISTRATION, FEES AND FINANCIAL REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the regulations stated on pages 18–34.

Registration in the School of Medicine *is for the full academic year.* After a student has entered the courses of instruction he is obligated for the full tuition. Acceptance by the School of a student's fee does not in any way obligate the School to accept the student for any subsequent year, and the right is reserved to require the withdrawal of any student whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

A fee of $15 to defray the costs of completing the records for consideration by the Committee on Admissions must accompany each application. This fee applies to students whose premedical training was completed at this University as well as to students who have not previously attended this University. Fees for each semester are payable in advance.

The Committee on Admissions is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed on invitation by the Committee.

Each applicant is notified of the Committee's decision as soon as possible.

An applicant who is offered a place in a class is required, within two weeks, to notify the Office of Admissions of the School of Medicine of his intent to accept

the place reserved for him. A deposit of $100 must be remitted not later than January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

Accompanying the offer of a place in class will be forms for a report on physical condition. This report must be completed and returned to the Office of Admissions of the School of Medicine by the student's physician within two months of receipt of the letter of acceptance.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $600; second year, $275; third year, $150; fourth year, $100; total $1125.

A fee of $1 a semester is charged for the use (optional) of a locker.

REGULATIONS

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required.

GRADES

A—excellent; *B*—good; *C*—passing; *D*—condition; *F*—failure; *I*—incomplete. The passing grade in each subject is *C* or above.

The symbol *I* indicates that the required work of the course has not been completed for reasons acceptable to the Dean. An "incomplete" must be removed by arrangement with the department concerned before the student may advance to the work of the following year.

A student receiving a grade of *D* or *F* in any subject may not advance to the work of the following year until he has complied with such recommendations of the Committee on Scholarship as are approved by the Faculty.

PHYSICAL EXAMINATIONS

All first-year students are required to have a comprehensive physical examination prior to admission to the School of Medicine. The students are informed of significant findings and advised regarding such measures as will tend to help them maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School maintains. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylaxis exists.

The Degree of Doctor of Medicine

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

COMBINED ARTS AND MEDICINE CURRICULUM

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least 90 semester hours of prescribed college work (at least 30 hours and one year of residence must be completed in Columbian College of Arts and Sciences) and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, and free of all indebtedness to the University. He must have completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

HONORS

A candidate who has completed the four-year medical course with a quality-point index of 3.50 or above, may be recommended by the Faculty for graduation "with distinction."

INTERN PROGRAMS

Straight internships are available in Medicine, Pathology, and Surgery.

RESIDENT PROGRAMS

Fifty-five approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, neurology, obstetrics-gynecology, orthopedic surgery, pathology, physical medicine, plastic surgery, psychiatry, roentgenology, surgery, thoracic surgery, and urology. Residency programs are from one to four years in duration, depending upon the service. Residents in the University Hospital also receive appointments as members of the faculty of the School of Medicine with active teaching responsibilities.

FELLOWSHIP PROGRAMS

Fellowships, through the School of Medicine, of one or two years are available in allergy, anesthesiology, cardiology, chest diseases, gastroenterology, hematology, infectious diseases, metabolic diseases, oncology, physical medicine, renal diseases, rheumatic disease, surgery, thoracic surgery, and University clinics.

All appointments are for one year with the privilege of applying for continuation on the House Staff. In several of the intern, residency, and fellowship programs, excellent affiliations are maintained with local and governmental hospitals. Inquiries and applications for internships and residencies should be addressed to the Chief

of the Department or to the Medical Director; the George Washington University Hospital, 901 23rd Street, NW., Washington 7, D. C.

Information relative to fellowships may be obtained from the Chief of the Department concerned or from the Director of Postgraduate Medical Education, in care of the Hospital.

Medical Technology Course

This course is open to candidates for the degree of Bachelor of Science in Medical Technology, offered by Columbian College of Arts and Sciences, and to the other applicants meeting the requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. These requirements, fully satisfied by the Columbian College program, consist of 3 years (90 semester hours or 135 quarter hours) of college work in any college or university accredited by a recognized standardizing association, including certain specific courses in the science field. The specific science requirements are as follows: *Chemistry*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in chemistry and including lecture and laboratory; *Biologic Sciences*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in biologic science and including lecture and laboratory; *Mathematics*—a minimum of 3 semester hours or 4 quarter hours of college mathematics.

For students enrolled in Columbian College of Arts and Sciences as candidates for the degree of Bachelor of Science in Medical Technology, the Medical Technology Course constitutes the final (fourth) year of qualification for the degree.

In the case of those who have taken their prerequisite work in some other college or university, satisfactory completion of the Medical Technology Course will not satisfy the requirements for the degree from Columbian College.

The Medical Technology Course consists of 12 months of didactic and practical work in clinical laboratory procedures, offered by the Department of Pathology in the University Hospital. Students ordinarily begin this course with the fall semester, but under exceptional circumstances may begin at other times.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. (See page 43.) All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of $65 a month is granted during the last 6 months of the fourth year in training.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the national certifying examination given by the Registry of Medical Technologists.

Enrollment in the Medical Technology Course is strictly limited so that personal instruction can be given. Acceptance to the Columbian College degree program does not necessarily assure acceptance into the Hospital program. Inquiry about this course should be sent directly to the Department of Pathology, The George Washington University Hospital, Washington 7, D. C.

THE NATIONAL LAW CENTER

HISTORY

Established in 1959, the National Law Center seeks, as an integral part of a University, to establish and coordinate programs of teaching, research, and creative development in law which will assist the profession to meet the demands placed upon it by contemporary society. The Center consists of two separate but closely related schools: the Law School and the Graduate School of Public Law. Emphasizing an interdisciplinary approach to modern social, political, scientific, and economic problems having legal implications, the Center also encourages close relations with other appropriate units of the University.

GENERAL INFORMATION

DAY AND EVENING DIVISIONS

Most day classes meet for fifty-minute periods between 9:10 A.M. and 1:00 P.M., Monday through Friday; Trial Practice Court meets for two-hour periods on Saturday morning.

Evening classes meet for two fifty-minute periods from 5:50 to 7:40 P.M., Monday through Friday. A four-credit course, e.g., Evidence, meets two evenings a week; a three-credit course, e.g., Administrative Law, meets two evenings a week for one half the semester and one evening for the other half; a two-credit course, e.g., Personal Property, meets one evening a week. The evening division conforms to the standards of the day division, the full-time faculty participating in the instruction.

THE LIBRARY

The Law Library of 60,000 volumes contains the official reports of the decisions of the courts of last resort of all states but one prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; and leading textbooks and treatises. Approximately 425 legal periodicals are currently received. A section of the library, consisting of books acquired from National University, is known as the National University Law Collection.

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

Also available to law students are 50,000 bound volumes and 20,000 pamphlets of the former library of the Carnegie Endowment for International Peace, in the fields of international law and relations, history, and economics, in the University Library.

The Law Library, which is on the third and fourth floors of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *are stated on pages 18–34; other University regulations, on pages 52–58.*

AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of 14 hours a week. Such students may take courses in the evening only if they are not available in the daytime and if a majority of the hours taken are in day courses. Students with 20 hours or more of outside employment whether in the day or evening division, must take a limited program of studies not exceeding 10 hours a week. Students taking a majority of their classes in the evening may not take more than 10 hours a week; the minimum load is 8 hours, except in special cases where 6 may be approved for a limited time. A minimum schedule of 10 hours in the day division is required except in exceptional circumstances when a reduced program is authorized by the Dean for continuing students.

ATTENDANCE

Regular attendence at classes is required and is necessary for successful work. A student who is deficient in class attendence in any course may be barred from taking the examination, and the course must be repeated.

RESEARCH PAPER IN LIEU OF EXAMINATION

The preparation of a research paper is required in lieu of an examination in the seminars and in some courses, as indicated in the course descriptions by (RP). In general, a qualified first-degree student may register for one such course; in special cases he may register for two, as for *Current Decisions* and one other.

EXAMINATIONS

Written examinations are held at the end of most courses. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. An entry of *I*, incomplete, will be made on the record of a student thus excused. To receive credit for the course, he must take the next regularly scheduled examination. The examination may not be taken after exclusion for low scholarship.

Permission to take an examination before the regularly scheduled date will not be granted. Permission to take a postponed examination is limited to the situation provided for in the preceding paragraph.

A special examination will be granted only to a student entitled to take a postponed examination, who is a candidate for a degree to be conferred at a convocation

which precedes the next regular examination in the subject. Written application, showing sufficient cause, should be addressed to the Dean, and approval will be granted at the discretion of the Faculty.

If a student fails to take an examination, a grade of zero will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

GRADES

Grades are given in numerical terms which are equivalent to letter grades according to the following scale: 85–100, *A*, excellent; 75–84, *B*, good; 65–74, *C*, satisfactory; 55–64, *D*, poor—below standard for graduation; below 55, *F*, failure. A student who has been excused from failure to take a regularly scheduled examination is given the grade of *I*, incomplete, and a student who has been barred from taking an examination because of excessive absences is given the grade of *EA*. See "Examinations" above, for grade upon failure to take an examination. Grades between 65 and 100 indicate that the work has been completed and credit given for the courses. Grades between 55 and 64, however, do not represent satisfactory work and adversely affect a student's cumulative average. No credit is given for grades below 55.

A student may not repeat a course he has failed, except by permission of the Faculty.

The cumulative average of a student includes all grades in all courses taken while he is a candidate for a particular degree. When a course is repeated, both the first grade and the subsequent grade or grades are counted in the cumulative average.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student will be excluded who fails in courses aggregating 8 or more semester hours in one semester or in two successive semesters, or who fails in courses aggregating 10 or more semester hours during his period of law study. A student subject to exclusion under this provision who is currently registered will be permitted to complete the work of the semester.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least 65 will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below 65, receive grades sufficient to give him a cumulative average of at least 65, he will be excluded. If a student on probation attains a cumulative average of at least 65 by the grades received during the semester his status will then become clear. A maximum of three semesters of probation is allowed. Thus, if a student whose status has become clear after two semesters of probation subsequently goes on probation, he will be allowed only one semester of probation in which to raise his average to at least 65.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration

the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

PLACEMENT SERVICE

The Law School and the Graduate School of Public Law take a continuing interest in the placement of their graduates in private practice and governmental service, as well as with industry and commerce. The Deans, the Faculties, and the University Placement Office cooperate in collecting information from alumni, law firms, and government agencies concerning opportunities in legal positions throughout the country. Senior law students and recent graduates are urged to keep in touch with the Law School Placement Office.

THE LAW SCHOOL

FACULTY AND STAFF OF INSTRUCTION*

C. B. Nutting, *Dean of the National Law Center;* Robert Kramer, *Dean of the Law School;* C. D. Benson, *Associate Dean of the Law School;* E. A. Potts, *Assistant Dean for Development in the National Law Center*

Professors C. D. Benson, O. S. Colclough, R. M. Cooper, J. F. Davison, R. G. Dixon, Jr.†, W. T. Fryer, J. R. Hambrick, Robert Kramer, W. T. Mallison, Jr., L. H. Mayo, L. S. Merrifield, A. S. Miller, C. B. Nutting, O. H. Walburn, D. B. Weaver, Henry Weihofen *(Visiting)*, G. E. Weston

Adjunct Professor J. W. Jackson

Professorial Lecturers E. A. Beard, M. F. Cohen, J. L. Edgerton, G. J. Goldsborough, L. J. Harris, G. L. Hart, Jr., Murdock Head, P. F. Herrick, J. A. McIntire, G. E. Monk, Lester Nurick, G. N. Robillard, W. S. Surrey, L. P. Walsh, C. J. Zinn

Associate Professors M. H. Freedman, D. C. Green, W. W. Kirkpatrick, S. C. Law, G. A. Ledakis‡, H. G. Manne, R. C. Nash

Associate Professorial Lecturers T. H. Brown, S. S. Cohen, H. P. Green, H. J. Liebesny, P. A. Rose

Assistants Professors L. A. Schiller, D. E. Seidelson, D. J. Sharpe, J. P. Sullivan

Lecturers G. D. Cary, W. W. Goodrich, A. H. Kaplan, Raymond Kellam, Alfred Letzler, E. A. Potts, Bernard Ramundo, I. H. Rimel

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* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and the Librarian of the Law Library constitute the Faculty.

† On sabbatical leave fall semester 1962-63.

‡ On leave of absence spring semester 1962-63.

Clerk of the Trial Practice Court J. A. Kendrick
Associate Clerk of the Trial Practice Court D. G. Skinker
Librarian of the Law Library H. Y. Bernard, Jr.

HISTORY

The Law School, the oldest in the District of Columbia, was established in 1865 with a formal program of two years of study. This was largely through the efforts of the Reverend George Whitefield Samson, President of Columbian College, whose action resulted in the purchase of a separate building for holding law classes. This building had belonged to Trinity Church of which Francis Scott Key had been Senior Warden. It was occupied by the Law School until 1884.

Sixty graduates, from twenty-two of the then thirty-seven states, received degrees in 1867. The School continued to have a student body and a faculty which reflected the fact that it was at the seat of our nation's government. Associate Justices David J. Brewer and John Marshall Harlan of the Supreme Court of the United States were among the prominent members of the bench and bar who served as lecturers.

In 1877, one year after the first such program was adopted in the United States, the Law School instituted a course leading to the degree of Master of Laws. In 1898 the course of instruction for the degree of Bachelor of Laws was extended to three years. The School took part in 1900 in the organization of the Association of American Law Schools. Later women students were admitted and in 1916 the first woman to take a regular course in law was graduated.

The Law School moved into its present quarters in 1925, marking the occasion with a dedicatory address by Dean Roscoe Pound. The building, Stockton Hall, is named for Rear Admiral Charles H. Stockton, President of the University from 1910 to 1917.

In the past quarter-century the Law School has developed its course and seminar offerings with consideration for the needs of first-degree and graduate students. The degree of Doctor of Juridical Science was instituted in 1940. The needs of foreign lawyers who come to this country and who require additional preparation for law work in the United States resulted in the creation of programs for the degrees of Master of Comparative Law in 1946 and Master of Comparative Law (American Practice) in 1951.

National University, which had had an important place in legal education in the District of Columbia since 1869, was merged in The George Washington University in August 1954.

Programs of special research and study, such as the independent Patent, Trade-Mark, and Copyright Foundation, give richness to the basic curriculum of the Law School.

LOCATION IN THE NATION'S CAPITAL

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative.

The years of residence at law school are years of participation in the life of the community, which in the case of The George Washington University Law School, is the government of the United States. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized, and whatever the community in which the student plans to practice.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School conducts (1) a program of study in preparation for the practice of law, whether it be general practice, specialized practice, or government service; (2) the publication of a law journal containing the results of research in public law; and (3) a series of student professional co-curricular activities. The Graduate School of Public Law supplements this program with study and research on the graduate level for foreign as well as for American students and with a continuing legal education program for members of the bar.

The Bachelor of Laws Program

The wide geographical distribution of the students makes for a truly national law school. Students from almost every state in the Union here join students from several foreign countries in their legal training. Last year over 320 colleges and universities were represented. The basic curriculum leading to the Bachelor of Laws degree is addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. It includes, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the understanding and technique of their use. It also includes the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial and appellate practice; and, through the medium of seminars, experience in group handling of legal problems.

ENTERING CLASSES

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, but not at the beginning of the summer term.

THE LAW REVIEW

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The student staff participates in a two-year *Law Review* program. The editorial staff is selected from among those students who have successfully completed the first year of *Review* work. Students receive four hours of academic credit for the two-year program.

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law. The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

The Legal Aid Program is under the joint sponsorship of The George Washington University Student Bar Association and the Junior Bar Section of the District of Columbia Bar Association. Participating students assist court-appointed attorneys in the preparation of cases for trial or appeal. Qualified second- and third-year students are eligible for participation in the program.

In the ranking of member associations by the American Law Student Association, The George Washington University Student Bar Association has received first place twice and second place twice in past years.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

CLASSIFICATION OF STUDENTS

Candidates for the degree of Bachelor of Laws are divided into classes on the completion of semester hours as follows: (1) full-time students: first year, 1–28; second year, 29–56; third year, 57 or more; (2) part-time students: first year, 1–20; second year, 21–40; third year, 41–60; fourth year, 61 or more.

UNCLASSIFIED STUDENTS

A degree candidate with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student to earn credits for transfer to the other law school.

REQUIREMENTS FOR THE DEGREES*

* The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at The George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students); (2) 80 semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty. All requirements for the degree must be completed at this Law School.

This degree is available only to students who entered the Law School prior to September 1961.

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and 80 semester hours of required and elective courses, with a cumulative average of at least 65. At least one academic year of residence and 28 semester hours are required of students admitted with advanced standing. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

HONORS

The degree of Bachelor of Laws "with distinction" is awarded students who obtain a minimum cumulative average of 85.

RESIDENCE

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the day division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a day student must attend 6 semesters to meet residence requirements, an evening student must attend 8. Students authorized to take schedules of less than 10 hours in the day division or less than 6 hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed to assure coverage of the basic courses and allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of 37 hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law. It is important that students plan ahead regarding their electives.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the course in Appellate Practice and Procedure and the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Patent Law, Patent Office Practice, Patent Trial Practice Court, and Federal Antitrust Laws. Additional courses recommended are Advanced Topics in Patent Law and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester.

Day Division

First Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Contracts I	2	Constitutional Law	4
Criminal Law and Procedure	4	Contracts II	4
Legal Method and Legal System	3	Real Property	4
Personal Property	2	Torts II	2
Torts I	3		
Total	14	Total	14

Second Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Civil Procedure	4	Administrative Law	3
Electives	10	Evidence	4
		Electives	7
Total	14	Total	14

Third Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	10	Electives	10
Total	12	Total	12

Evening Division

First Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Contracts I	2	Contracts II	4
Legal Method and Legal System	3	Criminal Law and Procedure	4
Personal Property	2	Torts II	2
Torts I	3		
Total	10	Total	10

Second Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Civil Procedure	4	Constitutional Law	4
Real Property	4	Electives	6
Electives	2		
Total	10	Total	10

Third Year

Fall Semester	Semester Hours	Spring Semester	Semester Hours
Administrative Law	3	Evidence	4
Electives	7	Electives	6
Total	10	Total	10

Fourth Year

Fall Semester	Semester Hours
Trial Practice Court	2
Electives	8
Total	10

Spring Semester	Semester Hours
Trial Practice Court	2
Electives	8
Total	10

THE GRADUATE SCHOOL OF PUBLIC LAW

FACULTY AND STAFF OF INSTRUCTION*

L. H. Mayo, *Dean*

Professors J. F. Davison, R. G. Dixon, Jr., Robert Kramer, L. H. Mayo, L. S. Merrifield, A. S. Miller, C. B. Nutting, Henry Weihofen *(Visiting)*, G. E. Weston
Professorial Lecturers M. F. Cohen, L. J. Harris, Murdock Head, J. A. McIntire, Lester Nurick, W. S. Surrey
Associate Professor R. C. Nash, Jr.
Associate Professorial Lecturers H. P. Green, H. J. Liebesny
Lecturers W. W. Goodrich, A. H. Kaplan, Raymond Kellam, Alfred Letzler, Bernard Ramundo

HISTORY

The general concept of a graduate school of public law in the City of Washington goes back at least as far as World War II, when a group of law teachers then in government service discussed the matter on several occasions. The idea was revived some years later when the Trustees of The George Washington University adopted a resolution commending "the Law Center as being worthy of the strong support of the entire University . . . and of all those who believe that the Law Center offers an opportunity for service of the highest order." During succeeding years the concept was further refined and it was determined that the Center should include a Graduate School of Public Law with its own dean and faculty. In 1959 the Trustees established the School.

OBJECTIVES

The Graduate School of Public Law has two basic objectives: (1) *to improve the quality of the educational process* by which lawyers are trained to cope with the increasingly complex problems of public law, including government-industry relation-

* Professors and Associate Professors constitute the Faculty.
Faculty and Staff of Instruction for the academic year 1962–63.

ships and international affairs, and (2) *to serve as an independent analysis center* for the purpose of examining and evaluating selected legal-policy issues of significant contemporary and long range interest. The first objective is implemented primarily through the graduate curriculum of courses and seminars while the second is achieved through continuing research study projects. Both of these objectives are covered in the semi-autonomous programs, such as that in Government Contracts.

PROGRAMS OF STUDY

DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws enables qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as day students for the convenience of lawyers in private practice and in government service.

CONTINUING LEGAL EDUCATION

An important part of the graduate program is the offering of courses in various fields of the law for members of the bar not interested in degree candidacy but desirous of keeping abreast of current developments. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as Continuing Legal Education students.

PROGRAMS FOR FOREIGN LAWYERS

To meet the needs of lawyers from countries whose legal systems are not based on the English law, the Law School provides two additional programs of study. For those who wish to acquire an understanding of our system which will permit them to work with its materials and practitioners after returning to their own countries, the program for the degree of Master of Comparative Law permits a selection of regular courses taken with undergraduate and graduate students. Foreign lawyers who wish to practice in a common law jurisdiction may enroll in the program for the degree of Master of Comparative Law (American Practice), a more intensive program of courses appropriate to this goal.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty of the Graduate School of Public Law. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party; and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for graduate degrees and specially qualified seniors may pursue this work.

UNCLASSIFIED STUDENTS

A member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools or a law school approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this School.

CONTINUING LEGAL EDUCATION STUDENTS

A simplified admission and registration procedure is used for members of the bar who desire to take courses on a noncredit basis. Continuing Legal Education students may not participate in student activities or benefit from the medical privileges of the University.

REQUIREMENTS FOR THE DEGREES

Master of Laws

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of 75, 20 semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases second- and third-year courses may be approved for inclusion in the program of study if not previously taken.

Master of Comparative Law

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily 24 semester hours in approved courses in the curriculum of the School or of such other departments of the University as the Faculty of the School shall approve.

Master of Comparative Law (American Practice)

The degree of Master of Comparative Law, American Practice (M.Comp.L.(Am. Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed 28 semester hours in approved courses in the curriculum of the School with a cumulative average of at least 65.

Doctor of Juridical Science

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He

must have pursued a course of study and research designated by his consultative committee and approved by the Faculty of the Graduate School of Public Law. At the conclusion of his first year of residence, or at such other time as the Faculty may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination is conducted by the consultative committee and such other members of the Faculty and qualified experts as are selected by the Faculty.

No later than the date specified in the University calendar the candidate must submit to the Dean of the Graduate School of Public Law three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertations, which are rigidly enforced. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Dean.

The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

FACULTY AND STAFF OF INSTRUCTION*

M. A. Mason, *Dean;* N. T. Grisamore, *Assistant Dean (Research);* H. E. Smith, *Assistant Dean (Academic)*

Professors P. A. Crafton, Louis dePian, N. T. Grisamore, R. A. Hechtman, Robert Heller, B. A. Lindberg, M. A. Mason, M. S. Ojalvo, H. E. Smith, C. H. Walther

Adjunct Professors Churchill Eisenhart, L. A. Guildner, A. G. McNish, Gunther Sorger, Theodore Young

Professorial Lecturers William Dorfman, Saul Gass, Ezra Glaser, Harold Gold, F. K. Harris, Laurence Heilprin

Associate Professors G. M. Arkilic, C. D. Ferris, R. R. Fox, John Kaye, A. C. Murdaugh

Assistant Professors E. H. Braun, R. E. Cronin, R. L. Dedrick, John Eftis, A. C. Meltzer, R. H. Moore

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* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

Faculty and Staff of Instruction for the academic year 1962–63.

Lecturers George Abraham, J. A. Cunningham, Milton Gussow, Chester Peterson, D. C. Rohlfs, L. S. Rotolo, P. H. Sawitz, T. B. Wiggins
Instructors D. K. Anand, T. P. Carroll, Ronald Feit

THE DEAN'S COUNCIL

M. A. Mason *(Chairman)*, N. T. Grisamore, John Kaye, M. S. Ojalvo, H. E. Smith, C. H. Walther

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering and Applied Science was organized October 1, 1884 as the Corcoran Scientific School of Columbian University and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The school was among the first to accept women for degree candidacy in engineering.

In 1903 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate.

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the school was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1903 was continued and has remained to this day as one of the important distinguishing features of the School.

In 1962 the name of the School became the School of Engineering and Applied Science.

The location of the School of Engineering and Applied Science in the nation's capital makes available a group of outstanding engineers and scientists as lecturers. It is traditional for the School to include these eminent professional specialists among the staff of instruction.

Those curricula of the School of Engineering and Applied Science which are within the purview of the Engineers' Council for Professional Development are accredited by that agency.

OBJECTIVE

The objective toward which the School strives is to stimulate and assist the student to develop to the limit of his capability; to acquire understanding of the principles and practices of engineering and applied science; to develop skill in the application of his knowledge to serve the needs of mankind; and to have a sense of responsibility to society and his profession.

ORIENTATION*

Students in the School of Engineering and Applied Science participate in the Orientation to the University, which is held during the week preceding registration for the fall semester. Events of the program include an advising period when members of the Faculty in the School are available for personal interviews to assist students in planning their programs to best prepare them for ultimate goals; an Orientation Assembly, required of all new students; a Curriculum Assembly, for guidance in the selection of courses for the coming semester; placement tests for new students; qualifying examinations for students who wish to waive curriculum requirements or qualify for advanced standing; scheduled social events; and the opportunity to discuss with older students and with staff members concerned with student activities the extracurricular program of the University, so that a wise and rewarding selection may be made.

Placement tests are required for students entering the School of Engineering and Applied Science and are scheduled during Orientation week and again during the week prior to the spring registration for students entering at that time. The results are available to students and advisers before registration as a guide to class placement. Students shown by such tests to be inadequately prepared are required to take remedial work before undertaking courses in areas of deficiency.

PROGRAMS OF STUDY

Programs of undergraduate study are offered leading to the Engineering Technologist Certificate and the degree of Bachelor of Science (with areas of concentration, see page 117).

Graduate work is offered leading to the degree of Master of Science, Master of Engineering Administration, and Doctor of Science.

ADVISORY SYSTEM

The School of Engineering and Applied Science encourages a close Faculty-student relationship. Every entering undergraduate student is assigned a permanent Faculty adviser to assist him to orient himself in the professional discipline. Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. The adviser represents the student in all cases requiring Faculty action.

Students in the introductory level must obtain their advisers' approval of programs of study prior to registration.

Until a student has completed the work of the introductory level he must follow

* See the calendar for dates of scheduled events.

the recommendations of his adviser in all academic matters. However, an adviser may not deny a student entry into any course or activity to which he is entitled under the regulations of the School. Students in the intermediate and advanced levels are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *are stated on pages 18–34; other University regulations, on pages 52–58.*

AMOUNT OF WORK

A full-time undergraduate student who is not on probation may take no more than 20 semester hours. A student employed more than 24 hours a week who is not on probation may take no more than 10 semester hours. In exceptional cases these limits may be exceeded with the permission of the Dean.

A student previously unemployed who accepts employment after registration must immediately report that fact to the Dean so that his schedule may be adjusted if necessary.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absense.

A student suspended for any cause may not attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

CHANGES IN PROGRAM OF STUDIES

In addition to the general University regulations on pages 53–54, the following regulations apply to students in the School of Engineering and Applied Science.

After the registration period a student may not make any changes in his registration without the approval of the Dean. Requests for changes in registration must be made on forms provided in the Office of the Dean.

During the seven days following the first day of classes of a semester, additional

courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

Withdrawal from any course without academic penalty after the fourteenth day following the first day of classes of a semester may be granted by the Dean under the following conditions: (1) exceptional circumstances make the request necessary; (2) the request is submitted on the official form for late withdrawals; (3) as of the date of request, the grades in all courses involved are *C* or better.

In the exceptional circumstances mentioned above the Dean may authorize withdrawal without academic penalty. In all cases financial regulations governing withdrawals remain in full effect.

A graduate student may withdraw from a graduate course without academic penalty only within the first four weeks of a semester.

CREDIT

Credit toward a degree is given only after registration for and satisfactory completion of the required work of classes or upon the granting of advanced standing in accordance with the regulations of the School. A student who takes a course as an auditor may not take the same course later for credit.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

HONORS LIST

The Faculty of the School of Engineering and Applied Science recognizes meritorious scholastic achievement by an Honors List, containing in alphabetical order the names of candidates for undergraduate degrees whose scholastic achievement satisfies all of the following requirements:

1. The candidate's cumulative quality-point index is equal to or exceeds 3.00.
2. At least 30 semester hours of credit have been earned while a degree candidate in the School of Engineering and Applied Science.
3. At least 15 (part-time student) or 30 (full-time student) semester hours of credit in a degree curriculum have been earned in the two semesters immediately preceding the award.
4. No grade below *C* has been received during the qualifying period stated above.
5. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters and displayed in an appropriate public place in the School of Engineering and Applied Science. A notation is made on the student's record each time his name is included in an Honors List.

Engineering Technologist Certificate

A two-year program of studies, leading to the Engineering Technologist Certificate, prepares the student to assume minor responsibilities in the field of measurement science. It is open to high school graduates who meet the requirements for admission stated on pages 24–25. For curriculum leading to the Certificate see pages 128–29.

The Degree of Bachelor of Science

Curricula leading to the degree of Bachelor of Science are offered in the following areas:

Civil Engineering
Communications
Control Systems
Electrical Engineering
Electronics
Energy Conversion
Engineering Science
Machine Computers
Measurement Science
Mechanical Engineering
Structures
Theoretical and Applied Mechanics

REQUIREMENTS FOR THE CERTIFICATE AND THE DEGREE

SCHOLARSHIP

Undergraduate

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at this University and accepted in the School of Engineering and Applied Science.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors report to the Dean the names of students whose scholarship is unsatisfactory. On receipt of a warning notice the student must consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

Probation.—A student whose quality-point index falls below 2.00 is placed on probation. This probation extends over the period in which the student attempts 12 semester hours of study.

A student on probation may be required to follow a program of study including remedial studies as prescribed. He may not hold office, participate in the activities of any student organization, or represent the School in any student activity.

Suspension.—A student whose quality-point index is below 2.00 at the end of his probationary period is suspended. A student whose index falls below 2.00 after removal from probation is suspended.

At the time of his suspension a student may apply to the Dean's Council for guidance concerning remedial action he should take during the period of his suspension.

A student suspended for poor scholarship may apply to be readmitted in the semester or summer session which begins next after an interval of one calendar year. To be considered for readmission he must pass prescribed tests. A student readmitted after suspension is on probation. He must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary

work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

RESIDENCE

For the Engineering Technologist Certificate, a minimum of 30 weeks and the last 30 semester hours must be completed in residence.

For the Bachelor's degrees, a minimum of 30 weeks and 30 semester hours must be completed in residence. Summer work may be counted. Unless special permission is granted by the Dean to study elsewhere, the work of the final year must be completed in residence.

THE CURRICULA

Undergraduate curricula of the School have a three-level form—the Introductory Level, the Intermediate Level, and the Advanced Level. Progression from one level to the next requires a certain number of semester hours of formal study and a satisfactory demonstration, through the medium of a comprehensive evaluation examination, of ability to use the knowledge gained through study and the intellectual powers developed.

BACHELOR OF SCIENCE CURRICULA

Introductory Level—70 semester hours (approximately)
(Intermediate Comprehensive Evaluation Examination)

Intermediate Level—35 semester hours (approximately)
(Advanced Comprehensive Evaluation Examination)

Advanced Level—35 semester hours (approximately)

A minimum total of 140 semester hours is required to qualify for the degree.

In general, study at the Introductory and Intermediate levels serves the purpose of acquisition and development of the broad base of information, skills, and attitudes on which the concentration of study at the Advanced Level will be founded. There is no formal specification of courses to be undertaken at the Introductory or Intermediate level; the concentration of study at the Advanced Level is specified and is related to a particular degree designation.

All undergraduate curricula lead to the degree of Bachelor of Science, with parenthetic designation of a particular area of concentration. For example: Bachelor of Science (Electronics); Bachelor of Science (Theoretical and Applied Mechanics); Bachelor of Science (Mechanical Engineering).

Degrees are offered in the following areas:

Civil Engineering
Communications
Control Systems
Electrical Engineering
Electronics
Energy Conversion
Engineering Science
Machine Computers
Measurement Science
Mechanical Engineering
Structures
Theoretical and Applied Mechanics

INTRODUCTORY LEVEL

The student entering the School with high school preparation starts his professional studies at the Introductory Level. His choice of courses is governed by his needs for preparation in the areas of knowledge included in the intermediate comprehensive evaluation examination and by his interests. There is no rigid specification of courses. The difference in semester hours between the number required for preparation and the approximate number required (70) is available to the student for elective study in any subjects he chooses.

Thus the student can choose the most effective (for him) of several paths to the Intermediate Level, can make full use of advanced placement opportunities, proceed at his own best pace, and have experiences to assist him in formulating his ultimate educational objective.

The student is required to obtain his faculty adviser's approval of his program each semester, prior to registration. For the guidance of the student and his faculty adviser, every beginning student must complete the School's placement examinations in English, Reading, Algebra, and Trigonometry. The student is required to undertake remedial work in any of these areas in which he is deficient as determined by the standards of the School, prior to enrollment in courses in the area of deficiency.

The areas included in the Intermediate comprehensive evaluation examination, see below, serve as a guide to students in arranging their programs of study. The content and level of the evaluation material are indicated by the context of the entire examination rather than by the statements under any one item. The examination measures the student's ability to integrate and use his knowledge as well as the extent and quality of his information.

The areas included in the examination are:

Analysis—including logic and method analysis

Communication—including correct use of English, spelling, composition, sketching, descriptive geometry, use of graphic aids, interpretation of drawings

Chemistry—introductory general chemistry

Mathematics—including analytic geometry, differential and integral calculus, ordinary and partial differential equations, finite series, complex variables, vector analysis, and finite mathematics

Physics—introductory general physics including molecular structure of matter and atomic physics

Statistics—principles and methods of statistics

Humanities—(the evaluation will require a critical essay in the area.)

The following curriculum illustrates one of several feasible combinations of courses that might be selected.

First Semester

		Semester Hours
Chem 13	General Chemistry	4
Math 27	Calculus I and II	6
Physics 15	General Physics	3
Elective		3

	Second Semester	Semester Hours
Ap S 4	Logic and Method in Analysis	3
Chem 14	General Chemistry	4
Math 28	Calculus III and IV	6
Elective		3

Third Semester

Ap S 5	Finite Mathematics and Statistics in Science I	3
Ap S 59	Introductory Analytical Mechanics I	5
Math 111 or Math 139	Mathematics for Engineers and Physicists I Advanced Calculus I	3
Elective		6

Fourth Semester

Ap S 6	Finite Mathematics and Statistics in Science II	3
Ap S 60	Introductory Analytical Mechanics II	5
Math 112 or Math 140	Mathematics for Engineers and Physicists II Advanced Calculus II	3
Physics 16	General Physics	3
Elective		3
Intermediate Comprehensive Evaluation Examination		0

The course requirements for entry into Intermediate Level may be satisfied in this School, Columbian College of Arts and Sciences, a junior college, or any other accredited institution of college level, and may consist of courses in any subjects acceptable for degree credit in the institution in which they are completed.

INTERMEDIATE LEVEL

A student wishing to enter the Intermediate Level presents approximately 70 hours of course work in any subjects and an Intermediate comprehensive evaluation examination. He is admitted to Intermediate Level study by favorable decision of the faculty group which appraises the student's qualifications to proceed with study, as shown by both his course record and the examination. A minimum of 60 hours of course work must be presented. The comprehensive evaluation examination must be taken in the School of Engineering and Applied Science.

The curriculum in the Intermediate Level is determined, as in the Introductory Level, by the student's needs in preparation for the Advanced comprehensive evaluation examination and by his interests. There is no specification of required courses.

At this level it is desirable for the student to anticipate, in his selections of courses, the area of concentration he intends to enter at the Advanced Level. While he continues to build foundation knowledge at this level, there is opportunity to expand the foundation in some areas in preparation for later concentration. The student is advised to plan his program at this level carefully, with the advice and assistance of his faculty adviser. At this level the student bears the entire responsibility for his study program; faculty approval is not required, but the professional advice and counsel of the student's adviser are available on request.

The areas included in the Advanced comprehensive evaluation examination, see below, serve as a guide to the student in planning his program at the Intermediate Level. The content and level of the evaluation material are indicated by the context of the entire examination rather than by the statements under any one item. The examination measures the qualification of the student to proceed productively in a

chosen area of concentration, and will include some material related specifically to particular areas of concentration.

The areas included in the examination are:

Analytical Mechanics—mechanics of rigid and deformable bodies, including soils and fluids

Field and Wave Theory—basic theory and analysis of fields (electric, magnetic, potential, vector, etc.) and of wave motion

Humanities—(the evaluation will require a substantial essay in a specific area)

Management Science—basic concepts and methods of management science, elementary operations research and analysis

Materials—structure of materials, behavior as related to structure, principles of control of material properties, quantum physics aspects

Metrology—standards, measurement principles, error, design of experiments, standard devices, and procedures in measurement

Network Theory—basic theory and analysis of networks and elements of network synthesis

Thermodynamics and Energy Conversion—Fundamental concepts and theory; electrical, mechanical, thermal, and chemical energy conversion systems

The following curriculum illustrates one of a number of combinations of courses that might be selected as a study program at the Intermediate Level (fifth and sixth semesters). The program shown anticipates later concentration in the area of Electrical Engineering.

Fifth Semester

		Semester Hours
Ap S 10	General Field Theory	3
Ap S 29	General Network Theory I	3
Ap S 101	Materials Science I	4
Ap S 105	Fundamentals of Measurement Science I	4

Sixth Semester

Ap S 11	General Wave Theory	3
Ap S 30	General Network Theory II	3
Ap S 102	Materials Science II	4
Ap S 106	Fundamentals of Measurement Science II	4
Advanced Comprehensive Evaluation Examination		0

ADVANCED LEVEL

A student wishing to enter the Advanced Level must present not less than 90 hours of course work in any subjects and an Advanced comprehensive evaluation examination. He is admitted to Advanced Level study by favorable decision of the faculty group which appraises the student's qualifications to proceed with study in the area of concentration, as shown by both his course record and the examination.

Advanced Level study provides for concentration in a specific area of engineering or applied science. The curriculum (study program) is defined in detail and determines the parenthetic degree designation. Although the required courses are specified, reasonable variation from the specification is possible to accommodate particular interests and needs of the student, especially when these relate to newly developed or frontier areas.

In contrast to study at the lower levels, study at the Advanced Level has a strong component of design and application, to give the student experience in the creative work that is the distinguishing characteristic of engineering and applied science.

All curricula at the Advanced Level include approximately 30 hours of specified course work, and electives to complete the total of 140 semester hours required to qualify for degree consideration.

For detailed description of the areas of concentration, see the separate catalogue of the School of Engineering and Applied Science.

GRADUATE RECORD EXAMINATIONS

During the final semester of the senior year students in the School of Engineering and Applied Science are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and the Advanced Test (Engineering) designed to measure the achievement of the college senior in his major field of study. (For further information concerning the Graduate Record Examinations, see page 56.)

THE MASTER'S DEGREES

The program of study is centered on the individual and his development, in accordance with his preparation and needs. It includes study in the individual's area of major interest supported by study in related fields. Increased knowledge and understanding are sought by concentration on principles and their application rather than by encyclopedic coverage of techniques and specialized detail.

Graduate study may be undertaken in any field of engineering or applied science in which a scientific discipline exists and in which the School has adequate facilities and resources.

REQUIREMENTS FOR THE DEGREES

The basic requirement for a Master's degree is the satisfactory completion of the comprehensive examination.

RESIDENCE

The candidate must complete a minimum of one year of full-time study, or the equivalent in part-time study, in the School. A full-time student must complete all requirements for the degree within three years; a part-time student, within five years.

SCHOLARSHIP

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further in the School until he demonstrates by examination, or as may be directed, that his deficiencies in course work have been removed. A grade of *B* or better is required for undergraduate courses taken to remove deficiencies in preparation for graduate study.

MASTER'S THESIS

The degree candidate must submit an acceptable thesis to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, and to furnish objective evidence of constructive power in a given field. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

COMPREHENSIVE EXAMINATION

To demonstrate substantial understanding of principles and methods of their use in the area of his interest, the student must pass a comprehensive examination, written, oral, or both as prescribed by the Faculty. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted an acceptable Master's thesis.

The Degree of Master of Science

The objective of this discipline is a substantial comprehension of principles and methods for their use, as applied in modern technology. Increased understanding and its use in solving engineering problems are sought, rather than a breadth of familiarity with applications and techniques.

A program of study, consisting of at least 24 semester hours of graduate courses to prepare the candidate for his comprehensive examination, and a written Master's thesis (6 semester hours) is formulated, with particular attention to the individual student's needs and objectives. The program may provide for broad coverage in a variety of fields or may be designed to give some degree of specialization in a particular area, as determined by conference at the time of admission to candidacy.

The level of the courses ordinarily requires as prerequisite the satisfactory completion of at least one undergraduate course in mathematics beyond the first course in ordinary differential equations and at least one in the area of the graduate course to be undertaken.

ADMISSION TO GRADUATE STUDY

Admission to graduate study requires a Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected.

Applicants who have significant deficiencies in their preparation may qualify for admission to graduate study by taking prescribed undergraduate courses. In some cases such study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree. Admission to graduate study does not admit the student to degree candidacy.

ADMISSION TO DEGREE CANDIDACY

Application for admission to candidacy for the degree of Master of Science must be made in writing to the Dean. To be accepted the applicant must have (1) been accepted for graduate study, (2) satisfactorily completed 9 semester hours of graduate courses, and (3) give evidence of satisfactory personal and intellectual qualifications. In exceptional cases the requirement of 9 semester hours of graduate courses may be reduced.

ADVANCED STANDING

Graduate courses completed before admission to graduate study are not transferable for degree credit. They may, however, be considered in planning individual programs. Course work to satisfy degree requirements in another school or college of the University may not be applied toward a degree in the School of Engineering and Applied Science.

REQUIREMENTS FOR THE DEGREE

See pages 122 and 123.

The Degree of Master of Engineering Administration

The objective of this discipline is to develop an understanding of the principles and a competence in the practices of administration as applied to engineering and scientific activities. Knowledge and understanding are sought rather than mere familiarity with techniques.

A study program is prescribed for each candidate; programs are integrated sequences of courses. This program is for engineers and scientists who have or anticipate responsibility for administration of engineering or scientific activities. Analysis, case study, and quantitative approaches are emphasized in addition to the technical theories of administration.

PREREQUISITE TO ADMISSION TO GRADUATE STUDY

In addition to the requirements for admission to graduate study stated below, the applicant must have an adequate knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement can be met by the successful completion of the following undergraduate courses or an approved equivalent: Psychology 145 *Principles of Human Relations*, Accounting 115 *Survey of Accounting*, and Statistics 107 *Statistics for Engineers*.

ADMISSION TO GRADUATE STUDY

The applicant must have adequate preparation for advanced study, including a satisfactory Bachelor's degree, together with acceptable personal qualities. The applicant must have capabilities and interests beyond the ability to assimilate organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation are necessary to the successful applicant. Admission to graduate study does not admit the student to degree candidacy.

ADMISSION TO DEGREE CANDIDACY

Application for admission to degree candidacy must be made in writing to the Dean. To be accepted the applicant must: (1) have completed satisfactorily all prescribed prerequisite study; (2) have satisfactorily completed graduate courses EA 201 and EA 202 *Engineering Administration I and II* and EA 271 *Operations Research;* and (3) give evidence of satisfactory personal and intellectual qualifications.

ADVANCED STANDING

Graduate courses completed before admission to graduate study are not transferable for degree credit. They may, however, be considered in planning individual programs. Course work to satisfy degree requirements in another School of the University may not be so applied in the School of Engineering and Applied Science.

REQUIREMENTS FOR THE DEGREE

See pages 122 and 123.

THE DOCTORAL PROGRAM

The School of Engineering and Applied Science offers a program of advanced study and research leading to the degree of Doctor of Science. This program is limited to recognized fields in engineering or applied science in which a scientific discipline exists and for which the University has adequate resources.

The Doctoral discipline is designed to prepare the student for a career of creative scholarship by providing a broad background of knowledge and an understanding of research methods. It requires study of interrelated fields of learning as well as original research in the field of central interest.

The discipline for the degree is divided into two stages. The first—made up of a study of interrelated fields of learning which support the general area of research concentration—culminates in the qualifying examination. The second—composed of research investigation of a particular subject in a special field and the presentation of such research findings in a written dissertation—culminates in the final examination.

Detailed information on the program is provided in a separate publication obtainable on request.

ADMISSION

The applicant must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. The applicant must have capabilities and interests beyond the ability to assimilate organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation or experiment are necessary to the successful applicant.

LANGUAGE REQUIREMENTS

A reading knowledge is required of two foreign languages important in the student's field of interest. One language examination must be passed before admission to graduate study. The second must be passed before admission to the qualifying examination and within one year of the start of study for the qualifying examination.

APPLICATION FOR ADMISSION

Well in advance of the opening of the semester for which the student seeks admission, he should have a personal interview with the Dean or the professor under whom he wishes to study, to discuss the field of study, the University's facilities for guidance in this field, the applicant's qualifications, and the possibilities of an effective

doctoral program. If an application for admission is indicated, the student will be advised concerning the details of application procedure, and his application will be referred for admission decision to a committee on admissions appointed to consider his qualifications.

STUDY FOR QUALIFYING EXAMINATION

Upon admission to study for the qualifying examination the student's admission committee becomes his Consultative Committee, which prescribes and directs his studies. The Committee assigns to him a group of fields of learning deemed necessary to insure his breadth of knowledge, as well as to support research in his central field. Members of the Committee advise the student concerning the scope and content of these fields of study and guide him in preparation for his examination in them.

The purpose of the qualifying examination is to ascertain that the student's breadth of background and intellectual development are adequate to support doctoral research and investigation in his central field. The qualifying examination is both written and oral and usually extends over a period of six days. It is given by a special committee consisting of members of the student's Consultative Committee and other specialists. Upon favorable report of the examiners to the Dean the student is admitted to candidacy for the degree, to pursue his specialized study and research under the supervision of a designated member of the Faculty.

The examination is the sole test of the student's ability to qualify for admission as a candidate for the degree, and to enter the second stage of his doctoral discipline.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

The student admitted to candidacy for the degree requests as Master in Research the member of the Faculty under whom he wishes to pursue research and specialized study. The Faculty member may accept or reject such request. The research is arranged by the Master and approved by the Dean. Throughout the remainder of the doctoral program, the candidate is responsible solely to his Master in his research and in the presentation of his dissertation.

The Dissertation

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. It is the responsibility of the candidate to obtain from his dean a printed copy of the regulations governing the styling and reproduction of dissertations, which are rigidly enforced.

Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

The summaries of accepted dissertations are printed in a numbered issue of the University Bulletin. The successful candidate is required before receiving his degree to pay a fee to cover the expense of printing of the summary of his dissertation.

The Final Examination

Upon approval of the dissertation by the Master, the candidate is presented for his final examination.

The final examination is oral and is open to the public. The candidate must demonstrate a mastery of his special field of interest and of the materials and techniques used in the research. The committee of examiners includes members of the Faculty competent in the research field or in closely related subjects and may also include qualified experts brought to the University especially to participate in the examination. If the candidate satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Faculty recommends him for the degree of Doctor of Science.

RESIDENT AND CONTINUOUS STUDY

All of the work for the degree must be done in residence (on the campus), except in certain circumstances when the student may be permitted to undertake a portion of the research problem in an approved off-campus facility. The student must maintain continuous registration in the School, even when granted a leave of absence. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student, and he must apply for readmission to graduate study under whatever new conditions and regulations are set up by his consultative committee.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the qualifying examination or as a candidate engaged in doctoral research. The qualifying examination, however, must be completed within five years of the date of admission, and the entire degree program must be completed within seven years. After admission the student may apply for his qualifying examination whenever his consultative committee believes that he is prepared to take it; his research and specialized study may be undertaken with whatever concentration of time meets the approval of his research adviser. Normally a minimum of two years of full-time study and research is spent in meeting the requirement for the degree.

THE CENTER FOR MEASUREMENT SCIENCE

The Center, under the direction of the School of Engineering and Applied Sciences, is a cooperative activity of the University, industry, and government providing education, research, and service programs related to measurement. It was established by the University in 1960.

The principal, but not exclusive, activities of the Center are:

The education of persons for careers in measurement science;

The development and improvement of measurement, standardization, and calibration techniques, apparatus, and data—with particular reference to high precision.

The provision of staff and facilities to industry for research and consultation on measurement problems in industry, including the maintenance of primary standards of measurement directly traceable to the national standards.

The publication of results of research, manuals of practice and procedures, and information related to measurement science.

The Center maintains relations with industry and government through its Associate Program, in which interested individuals, companies, or other organizations may participate. The mutual communication, collaboration, and support made possible by this program bring vitality to the Center activities and insure attention to the needs of industry and government.

Through these and other activities the Center serves as a source of personnel competent in measurement science, as an instrument for collaborative research on measurement problems, and as a service organization providing expert capability to industrial and government organizations in the solution of their measurement problems.

THE EDUCATION PROGRAM

The Education Program of the Center consists in part of curricula offered by the School, which prepare the student to assume responsibilities in the field of measurement science. The curricula are integrated, to permit a student to terminate his formal education at any level, or to proceed to the next level. Programs lead to the Engineering Technologist Certificate and the degrees of Bachelor of Science, Master of Science, and Doctor of Science.

In addition to the certificate and degree programs, the education program includes seminars, special conferences, and short courses offered from time to time.

Engineering Technologist Certificate

This is a two-year program open to high school graduates who meet the requirements for admission stated on pages 24 and 25.

CURRICULUM

		Semester Hours
	First Year	
Ap S 3	Graphical Communication	3
Ap S 4	Logic and Method in Analysis	3
Ap S 5–6	Finite Mathematics and Statistics	6
Chem 13–14	General Chemistry	8
Math 27, 28	Calculus I–II, III–IV	12
Physics 15	General Physics	3
	Total	35
	Second Year	
Ap S 10	General Field Theory	3
Ap S 11	General Wave Theory	3
Ap S 52	Introductory Transducers and Instrumentation	3
Ap S 59–60	Introductory Analytical Mechanics I–II	10

		Semester Hours
Ap S 105–6	Fundamentals of Measurement Science I–II	8
Math 111	Mathematics for Engineers and Physicists I	3
Physics 16	General Physics	3
Elective		3
	Total	36

THE RESEARCH PROGRAM

The research program of the Center includes all aspects of research and development related to measurement science. Research and/or development may be undertaken as independent studies by staff members for the Center, as studies for a sponsor under contract, or by personnel of Associates of the Center assigned to the Center to undertake the specific work. Associates receive publications of the Center; certain publications may be restricted in distribution.

THE SERVICE PROGRAM

The Center, arranges for consultation and assistance of the Faculty and Staff and the use of the facilities of the Center in connection with specific problems in measurement. The program is restricted to the use of the Associates of the Center.

The Service Program also makes it possible for Associates to engage the various resources of the University, through the Center, as may be desirable and feasible, in solution of their problems in measurement.

THE SCHOOL OF PHARMACY

THE FACULTY AND STAFF OF INSTRUCTION*

R. M. Leonard, *Dean*

Professors I. B. Hansen, R. D. Kennedy, G. M. Koehl, R. M. Leonard, R. H. Moore, E. M. Renkin, R. B. Stevens, C. R. Treadwell, R. C. Vincent

Associate Professors F. D. Cooper, Rudolph Hugh, C. J. Kokoski, G. G. Lu, S. M. Schwartz, J. W. Skinner

Associate Professorial Lecturer C. G. Frailey

Assistant Professor G. G. Koustenis

Special Lecturers W. S. Apple, G. F. Archambault, Karl Bambach, W. P. Briggs, C. J. Carr, E. G. Feldmann, L. E. Kazin, Henry Miller, M. L. Yakowitz

* Professors, Associate Professors, and Assistant Professors constitute the Faculty. Faculty and Staff of Instruction for the academic year 1962–63.

COMMITTEES*

THE DEAN'S COUNCIL†

I. B. Hansen, C. J. Kokoski, S. M. Schwartz

COMMITTEE ON SCHOLARSHIP

R. C. Vincent *(Chairman)*, G. G. Koustenis, S. M. Schwartz

COMMITTEE ON ADMISSION AND ADVANCED STANDING

R. M. Leonard *(Chairman)*, C. J. Kokoski, G. G. Koustenis, S. M. Schwartz

ADVISORY COMMITTEE

I. A. Tennyson *(Chairman)*, J. E. Allen, Howard Bradbury, M. H. Bortnick, W. P. Briggs, M. L. Elsberg, D. I. Estrin, F. R. Franzoni, R. D. Gibbs, M. G. Goldstein, A. J. Obert

GENERAL INFORMATION

INTRODUCTORY

In 1867 the foundation for the National College of Pharmacy was laid by the Apothecaries' Association of the District of Columbia. The College was opened in 1872 and continued until 1906, when it became affiliated with The George Washington University.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education. It is a member of the American Association of Colleges of Pharmacy.

Washington offers many opportunities for the student of pharmacy. The American Institute of Pharmacy, the headquarters of the American Pharmaceutical Association, is only a few blocks from the School of Pharmacy. The Institute also houses a pharmaceutical museum, a library, and research laboratories. Government agencies and laboratories whose activities are closely allied to pharmacy, and the government libraries, the facilities of which are open to the student, are readily accessible.

The Institute and the Federal Government bring to Washington leaders in the fields of pharmacy, many of whom present to senior students current professional information.

OBJECTIVE

The objectives of the School of Pharmacy are (1) to train professionally competent pharmacists, primarily for retail practice, and to help them acquire specialized training, a general education, and an attitude of responsibility to their profession and to society; (2) to promote the health profession of pharmacy in general, and particularly within the community.

To achieve these objectives, the School has developed a systematic plan of in-

* The Dean of the School of Pharmacy is a member ex officio of all committees.
† Elected by the Faculty.

struction for the professional courses. The professional work is based on a two-year preprofessional program of basic science and liberal arts. It encourages student participation in University, professional, and civic organizations and activities which increase professional competence, raise professional standards, and help develop social responsibility.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *are stated on pages 18–34; other University regulations, see pages 52–58.*

Students registered in the pre-pharmacy curriculum of Columbian College of Arts and Sciences are subject to the regulations of that college.

AMOUNT OF WORK

A student who wishes to take more than the normal amount of work, as outlined on pages 133–34, may do so only with the permission of the Committee on Scholarship, the members of which are guided in their decision by his scholastic record and the extent to which he is employed. A student on probation is limited in the number of semester hours he may carry.

The student is not encouraged to undertake outside employment while attempting a full course of study. A student who maintains a general quality-point index of 2.00 or higher and an index of 2.50 in pharmacy courses may be granted permission by the Dean to undertake outside employment. The amount of employment permitted is governed by the scholarship record of the student and the number of semester hours for which he is registered.

A student who accepts employment after registration or at any time during the semester must report immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

Except by special permission of the instructor, credit will not be given for any pharmacy course if absences, including both lecture and laboratory, exceed in number for each semester the hours of credit for the semester. If a course has distinct divisions such as lectures, laboratories, or recitations, the absences apply pro rata to such divisions.

EXAMINATIONS BEFORE STATE BOARDS OF PHARMACY

To be eligible for examination before state boards of pharmacy, the applicant is required to present satisfactory evidence of graduation from a college of pharmacy. In addition, most states require one year of practical experience in a pharmacy. This experience may not be gained concurrently with the school year. In some states, a portion of it must be obtained following graduation.

The Degree of Bachelor of Science in Pharmacy

The School of Pharmacy offers curricula leading to the degree of Bachelor of Science in Pharmacy.

REQUIREMENTS FOR THE DEGREE

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 52 and 53.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, he must have an index of at least 2.50 in all pharmacy courses.

Probation.—A student must maintain a general quality-point index of 2.00 and a pharmacy index of 2.50 or be placed on probation.

The following scholarship rules on general quality-point index are applied when a student has undertaken a multiple of 9 semester hours. Those on the pharmacy index are applied when he has completed 12 pharmacy hours and thereafter are applied in multiples of 9 hours.

First Probation.—A student is placed on first probation when his general quality-point index is below 2.00 or his pharmacy index is below 2.50. (See also under "Suspension".)

Second Probation.—A student who has a general quality-point index below 2.00 or a pharmacy index below 2.50 after a multiple of 9 semester hours is placed on second probation. However, a student who has a general index between 1.50 and 2.00 or a pharmacy index between 2.20 and 2.50 is considered by the Committee on Scholarship. In each case, the Committee may retain him on probation or suspend him.

Suspension.—A student who has a general quality-point index below 1.50 or a pharmacy index below 2.20 is suspended. However, a student who has a general index between 1.40 and 1.50 or a pharmacy index between 2.00 and 2.20 is considered by the Committee on Scholarship. In each case, the Committee may retain him on probation or suspend him.

A student subject to probation for the third time, whether successive or after an interval, is suspended. In considering a student for suspension, the rules on probation apply to the general and to the pharmacy index independently.

A student suspended for poor scholarship may apply for readmission after an interval of a calendar year. He must then submit evidence to the Dean that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

CURRICULUM

The pre-pharmacy curriculum of Columbian College of Arts and Sciences comprises the first two years of the pharmacy course (see page 69). It satisfies the pre-professional needs of the School of Pharmacy and the general cultural requirements of the lower division of Columbian College.

The minimum requirements for the degree of Bachelor of Science in Pharmacy are 162 semester hours, distributed as follows:

First and Second (Pre-Pharmacy) Years

Courses	Did. hrs.*	Lab. hrs.	Sem. hrs.	Clock hrs.*
Courses in Columbian College of Arts and Sciences (or equivalent)	768	592	64	1,360

* Exclusive of Physical Education.

Third Year: Fall Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
*Chemistry 151	48	48	4	96
Pharmacy 101	16	.....	1	32
Pharmacy 115	48	.....	3	48
Pharmacy 121	48	48	4	96
Physiology 137	48	64	4	112
Total	208	160	16	384

Third Year: Spring Semester

*Chemistry 152	32	96	4	128
Microbiology 112	48	96	4	144
Pharmacy 122	32	96	4	128
Physiology 170	48	.....	3	48
Total	160	288	15	448

Fourth Year: Fall Semester

Biochemistry 221	32	96	4	128
Pharmacy 131	32	48	3	80
Pharmacy 141	32	48	3	48
Pharmacy 143	48	.....	3	80
Elective	48	.....	3	48
Total	192	192	16	384

Fourth Year: Spring Semester

Biochemistry 222	32	96	4	128
Pharmacy 132	48	.....	3	48
Pharmacy 144	48	.....	3	48
Pharmacy 146	48	48	4	96
Preventive Medicine 210	32	.....	2	32
Total	208	144	16	352

Fifth Year: Fall Semester

Pharmacy 151	48	.....	3	48
Pharmacy 161	10	6	1	16
Pharmacy 165	64	.....	4	64
Pharmacy 171	48	.....	3	48
Pharmacy 181	32	96	4	128
Elective	48	.....	3	48
Total	250	102	18	352

* Some transfer students may find it necessary to take Chemistry 21 and/or Chemistry 22 instead of Chemistry 151–52 in the third year.

Fifth Year: Spring Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
Pharmacy 154	48	.....	3	48
Pharmacy 166	48	64	4	112
Pharmacy 176	48	.....	3	48
Pharmacy 182	32	96	4	128
Pharmacy 188	48	.....	1	48
Pharmacy 190	16	.....	1	16
Pharmacy 192	.....	48	1	48
Total	240	208	17	448
Grand Total	2,026*	1,686*	162	3,728*

THE SCHOOL OF EDUCATION

THE FACULTY AND STAFF OF INSTRUCTION†

J. H. Fox, *Dean* (to February 1); F. N. Hamblin, *Dean* (from August 15); B. S. Root, *Assistant Dean* (*Acting Dean*, February 1 to August 15)

Professors G. L. Angel, J. G. Allee, Jr., H. F. Bright, Elizabeth Burtner, W. T. Carroll, V. J. DeAngelis, J. H. Fox, F. N. Hamblin, R. G. Hanken, Thelma Hunt, B. H. Jarman, J. H. Krupa, Helen Lawrence, C. E. Leese, G. E. McSpadden, W. H. Myers, C. W. Pettit, B. S. Root, Kathryn Towne

Professorial Lecturers K. E. Brown, Kathryn Cook, D. D. Darland, J. B. Holden, C. D. Hutchins, H. O. Johnson, B. D. Joy, J. C. Lang, Florence Lumsden, Anthony Marinaccio, Madaline Remmlein, J. F. Rogers, J. P. Walsh, H. M. Wilson

Associate Professors R. E. Baker, Mary Coleman‡, H. G. Detwiler, Eva Johnson, Virginia Kirkbride, W. A. McCauley, Martha Rashid, Carol St. Cyr, Mildred Shott, Loretta Stallings

Associate Professorial Lecturers J. L. Cameron, Beverly Crump, John Giancaspro, Samuel Kavruck, Zelda Kosh, C. O. McDaniels, Helen Mitchell, Eugenia Nowlin, Mary Osterndorf, R. R. Reed, Mary Scott, W. D. Thompson, LuVerne Walker, Hazel Wilson

Assistant Professors J. G. Boswell, R. W. Eller, Lyndale George, Margaret McIntyre, Jeanne Snodgrass, Connie Vaughan

Lecturers Pat Abernethy, W. E. Amos, Marcella Bernstein, H. Z. Cushman, D. W. Hunt, R. J. Kubalak, Joanne Parker, R. S. Westerlund, Ward Whipple

Instructors Donna Abbey, Kathleen Criddle

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* Exclusive of Physical Education.
† Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty. Faculty and Staff of Instruction for the academic year 1962–63.
‡ On leave of absence fall semester 1962–63.

FIELD STUDIES

Director J. W. Charles; *Assistant Director* M. H. Jessup

FIELD SERVICE COORDINATORS

Alexander Anderson, *Assistant Principal, Washington-Lee High School, Arlington, Va.*; Mary Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.*; C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

COMMITTEES*

THE DEAN'S COUNCIL†

1964: Lyndale George, Kathryn Towne; 1965: Eva Johnson, J. H. Krupa; 1966: W. T. Carroll, Carol St. Cyr

COMMITTEE ON GRADUATE STUDIES†

F. N. Hamblin *(Chairman)*, G. L. Angel, R. E. Baker, W. T. Carroll, H. G. Detwiler, Thelma Hunt, Virginia Kirkbride, W. A. McCauley, B. S. Root, Carol St. Cyr

COMMITTEE ON ADMISSIONS AND ADVANCED STANDING‡

F. N. Hamblin *(Chairman)*, J. H. Krupa, B. S. Root, J. Y. Ruth, Loretta Stallings, Kathryn Towne

COMMITTEE ON SCHOLARSHIP

B. S. Root *(Chairman)*, V. J. DeAngelis, Helen Lawrence, Kathryn Towne

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education. In addition to programs of study leading to degrees, the School offers nondegree programs for certification and the renewal of certificates.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

* The Dean and Assistant Dean of the School of Education are members ex officio of all committees.
† Elected by the Faculty.
‡ Appointed by the Dean.

REGULATIONS

Regulations concerning Admission, Registration, Fees and Finances *are stated on pages 18–34; other University regulations, on pages 52–58.*

AMOUNT OF WORK

Fifteen to 17 semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher, may, with the permission of the Dean enroll for 18 or 19 hours. No student may enroll for more than 19, except by permission of the Committee on Scholarship.

A student employed 15 hours or less a week may carry a normal program of college work.

A student employed from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student employed from 26 to 34 hours a week may enroll for 9 or 10 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student employed 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment after registration or at any time during a semester must report immediately to the Dean so that his program may be adjusted, if necessary.

THE BACHELOR'S DEGREES

The School of Education offers programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics*, and Bachelor of Science in Physical Education.

The program of each student must be approved by a Faculty adviser. Since each student's program is defined by his particular needs, it is important that the student have a clear concept of his major interest in education, and also that he be familiar with the teaching-certificate requirements of the locality in which he expects to teach.

REQUIREMENTS FOR THE DEGREES

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

RESIDENCE

Candidates for the Bachelor's degrees must complete satisfactorily while matriculated in the School of Education a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in the Off-Campus Division of the College of General Studies.

For full details concerning continuous registration, see "In Residence Status", page 56.

* This degree will be conferred for the last time in June 1965.

SCHOLARSHIP

The system of grading and of computing scholarship is described in detail on pages 52 and 53.

In order to graduate, a student must have a quality-point index of at least 2.00.

Probation.—A student who fails to maintain a quality-point index of at least 2.00 is placed on probation. He remains on probation as long as his index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—A student on probation who fails to raise his index to 2.00 within the time specified may be suspended. A student who fails one-half or more of the minimum of 16 semester hours may be suspended.

A student suspended for poor scholarship may, within ten days, appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student seems likely to improve in his scholarship, the Committee may readmit him on probation. A student denied readmission may again, after the lapse of a calendar year, petition the Committee through the Dean for readmission. A student suspended twice will not be readmitted.

CURRICULUM REQUIREMENTS

In any of the following curricula at least 30 semester hours must consist of courses numbered above 100.

Bachelor of Arts in Education

The objective of programs leading to the degree of Bachelor of Arts in Education is to provide (1) general educational backgrounds; (2) functional command of ideas, concepts, knowledge, and skills in one or more teaching fields; (3) mastery of basic professional information and skills adequate for the beginning teacher; and (4) development of attitudes needed for success in teaching.

The general educational backgrounds needed by prospective teachers are obtained through: precollege education, college courses, work experience, leadership activities, student campus activities, and off-campus cultural opportunities.

Normally, from 60 to 64 semester hours of the total requirement are completed in the lower division of Columbian College of Arts and Sciences of this University or in an equivalent institution elsewhere. (See "Education", page 69.) Since the teaching fields differ in content, scope, and complexity, some programs are longer than others. None requires less than 126 hours of satisfactory work, exclusive of required Physical Education. All candidates are required to take and make a satisfactory score on the common part of the National Teacher Examinations.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations if available*, and satisfactory completion of the prescribed special methods courses. Programs of study are available in the following fields: art, biology†, business education, chemistry, elementary education, Eng-

* Special field examinations of the National Teacher Examinations are available in Elementary Education; Early Childhood Education; Biology and General Science; English Language and Literature; Industrial Arts; Mathematics; Chemistry, Physics, and General Science; Social Studies; Physical Education; Business Education; Music Education, Home Economics, and Art Education. Students preparing to teach History or Geography will take the special field examination in Social Studies. Students preparing to teach in fields in which special NTE field examinations are not available (Languages and Speech) must obtain a satisfactory score on a special field examination given by the instructor in the special methods course involved.

† This is an interdepartmental field offered by the departments of Botany and Zoology.

lish, French, general science, geography, German, history, mathematics, physical education, physics, Russian, social studies, Spanish, and speech. (See the School of Education separate catalogue for the prescribed courses in these fields.)

The student preparing to teach on the secondary level may be required to complete the prescribed courses in a minor as well as a major field. The student preparing to teach on the elementary level should use free electives within an academic field or area of specialization.

PROFESSIONAL EDUCATION

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses—Secondary

		Semester Hours
Education 108:	Human Development, Learning, and Teaching	3
Education 112:	Educational Measurement, or	
Statistics 104:	Statistics in Psychology and Education	3
Education 123:	Society and the School	3
Education 131:	Principles and Methods of Secondary School Teaching	3
Education 134:	Student Teaching in Secondary Schools	6–9
Three to six semester hours from the following Special Methods courses		3–6
Education 136:	Teaching English	
Education 137:	Teaching Speech	
Education 138:	Teaching Social Studies	
Education 140:	Teaching Mathematics	
Education 144:	Teaching Science	
Education 146:	Teaching Foreign Languages	
Education 150:	Teaching Business Subjects	
Total		21–27

Professional Courses—Elementary

Education 108:	Human Development, Learning, and Teaching	3
Education 111:	Methods in Elementary Education	12
Education 112:	Educational Measurements, or	
Education 123:	Society and the School	3
Education 135:	Student Teaching in Elementary Schools	9
Statistics 104:	Statistics in Psychology and Education	3
Total		30

Bachelor of Science in Home Economics*

The curriculum leading to this degree is designed to prepare young women for the important responsibility of home-making. The program can be adapted, however, to meet special requirements in nutrition, dietetics, clothing, and other related fields. Each student must plan her work with the assistance of a faculty adviser in the Department of Home Economics.

* Open only to students enrolled in the Home Economics curriculum of the lower division of Columbian College of Arts and Sciences as of September 1961 or earlier or students who transfer from other accredited institutions with enough acceptable credits to assure their completion of the program by June 1965. This degree will be conferred for the last time June 1965.

GENERAL HOME-MAKING

JUNIOR YEAR	Semester Hours
Home Economics 53	3
Home Economics 72	3
Home Economics 102	3
Home Economics 123	3
Physiology 115	3
Elective	15
Total	30

SENIOR YEAR	Semester Hours
Home Economics 152	3
Home Economics 171	3
Home Economics 181	3
Home Economics 192	3
Home Economics 197–98	6
Elective	12
Total	30

Bachelor of Science in Physical Education for Men*

There are three curricula leading to this degree. The curriculum in Physical Education with an academic minor is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Physical and Health Education curriculum prepares for the teaching of physical and health education in the larger schools. The curriculum in Physical Education and Recreation has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are 66 semester hours, distributed as follows:

CURRICULUM IN PHYSICAL EDUCATION WITH AN ACADEMIC MINOR

JUNIOR YEAR	Semester Hours
Education 108	3
Education 123	3
Physical Education 105	3
Physical Education 107	1
Physical Education 113–14	4
Physical Education 121–22	6
Physiology 115	3
Academic teaching field	4
Elective	6
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 134	6–9
Physical Education 103	3
Physical Education 115–16	4
Physical Education 131	3
Physical Education 138	3
Academic teaching field	8–11
Total	33

CURRICULUM IN PHYSICAL AND HEALTH EDUCATION

JUNIOR YEAR	Semester Hours
Education 108	3
Education 123	3
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 121–22	6
Physiology 115	3
Elective	9
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 134	6–9
Physical Education 103	3
Physical Education 105	3
Physical Education 115–16	4
Physical Education 131	3
Physical Education 138	3
Elective	5–8
Total	33

* Candidates for the degree of Bachelor of Arts in Education may also prepare to teach Physical Education in secondary schools as a minor teaching field. Those preparing to teach in the elementary school may choose Physical Education as an area of specialization. For detailed requirements see School of Education separate catalogue.

CURRICULUM IN PHYSICAL EDUCATION AND RECREATION

JUNIOR YEAR	Semester Hours
Education 108	3
Education 123	3
Physical Education 48	2
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 121	3
Physical Education 132	1
Physical Education 151–52	6
Elective	6
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 134	6–9
Physical Education 103	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Physical Education 161	3
Physical Education 162	3
Elective	3–6
Total	33

Bachelor of Science in Physical Education for Women*

The Physical Education major curriculum is designed to prepare students for teaching in elementary and secondary school programs of physical education.

Within this curriculum there is opportunity for specialization in dance, corrective physical education, and recreation.

The student wishing to prepare to teach another subject in addition to physical education may do so by using her elective hours to work toward a minor teaching field. Relevant work completed in Columbian College of Arts and Sciences may be counted.

JUNIOR YEAR	Semester Hours
Education 108	3
Education 123	3
Physical Education 105–6	6
Physical Education 107	1
Physical Education 111–12	4
Physical Education 117–18	2
Physical Education 121	3
Physical Education 122	3
Physical Education 132	1
Physiology 115	3
Elective or minor teaching field	5
Total	34

SENIOR YEAR	Semester Hours
Education 131	3
Education 134	6–9
Physical Education 101	3
Physical Education 103	3
Physical Education 113	3
Physical Education 131	3
Physical Education 138	3
Elective or minor teaching field	5–8
Total	32

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Programs of study leading to the degree of Master of Arts in Education are designed to enable prospective teachers and teachers of experience to increase their knowledge of professional and academic information and skills, prepare for special types of educational service, and provide opportunities for graduates of liberal arts or other nonteacher education institutions to acquire needed professional education.

From the various related departments of the University, the student and his adviser select courses to give the student an adequate background in his chosen field of service. The prospective high school or junior high school teacher will ordinarily include study in the subject which he is planning to teach as well as in professional education.

Programs for teachers-in-service and experienced teachers planning to re-enter the

* See footnote on page 139.

profession are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing or telephoning to the Dean.

Graduate programs of study are available in the following fields: (1) adult education, (2) classroom teaching—to include strengthening mastery of teaching field, (3) comparative education, (4) curriculum, (5) elementary education, (6) employee training, (7) guidance, (8) history of education, (9) philosophy of education, (10) reading, (11) school administration—secondary or elementary school principalship, and (12) secondary education.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Master's degree are stated on page 26. Those wishing to prepare for careers in guidance or administration must have had at least two years of successful teaching experience. Candidates whose undergraduate preparation does not include equivalents of the basic requirements of the degree of Bachelor of Arts in Education must make up deficiencies.

ADVANCED STANDING

For the record, advanced standing is granted for approved courses taken at other accredited institutions, but a minimum of 30 semester hours must be completed at this University as a matriculated candidate for the degree.

Advanced courses completed in this University in excess of the requirements for the Bachelor's degree may be credited toward the Master's degree to the extent of 12 semester hours, if the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

Advanced standing is not granted for work completed five or more years before application for admission or readmission to Master's candidacy.

REQUIREMENTS FOR THE DEGREE

PLAN OF STUDY

The plan of study leading to the degree of Master of Arts in Education requires a minimum of 33 hours of graduate credit. The plan may, at the student's option, include a thesis carrying 6 hours of graduate credit. Whether or not a student selects the thesis option, a minimum of 18 hours, including a course in educational research methods and procedures, must be from courses planned primarily for graduate students (third-group courses). A minimum of 12 hours, not including the thesis or the research course must be from courses offered by the Department of Education.

Programs may include additional teaching-field preparation. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education (see pages 137–38).

Programs are planned initially in conference with an admission adviser in the Office of the School of Education and subsequently with a designated adviser in the candidate's area of specialization. They take into consideration the interests of the candidate, the previous background, certification requirements of the state and locality in which he plans to teach.

All degree requirements must be completed within a period of six years after admission to study.

RESIDENCE

The satisfactory completion of 30 semester hours while a matriculated candidate for the degree is required. With the approval of the adviser, 9 of the 30 hours may be in the Off-Campus Division of the College of General Studies.

THE THESIS

If a candidate selects the thesis option, the thesis must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The choice of the thesis subject must be approved in writing by the student's adviser and filed in the Office of the Dean no later than the date announced in the University calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period he must register for it again and pay tuition on the same basis as for a repeated course.

COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a comprehensive examination in two parts: (1) a general three-hour examination concerned with an integrated understanding of the foundations of professional education, and (2) a special three-hour examination concerned with the candidate's area of specialization. For additional information, see the separate catalogue of the School of Education.

FIVE-YEAR PROGRAM

A candidate entering the School of Education from the lower division of Columbian College of Arts and Sciences (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the Bachelor of Arts junior-year professional courses and a maximum of 18 semester hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Student Teaching, to be elected in the third year, may not be taken for graduate credit. A quality-point index of at least 2.50 in undergraduate courses must be attained before beginning the work of the senior year and the program must meet all the requirements for the degrees of Bachelor of Arts and Master of Arts in Education.

THE ADVANCED PROFESSIONAL CERTIFICATE

This program is designed to prepare teachers for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale.

The program of studies leading to the Certificate is selected by the candidate and his adviser from the various related departments of the University in accordance with

the student's needs. In general it includes 30 hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study in his teaching field. For information concerning available programs, see the separate catalogue of the School of Education.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Advanced Professional Certificate are stated on page 26. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education

ADVANCED STANDING AND TRANSFER OF CREDIT

Advanced standing is granted for appropriate graduate work completed in other accredited higher institutions. However, a minimum of 18 semester hours must be completed at this University as a matriculated candidate in the School of Education. The candidate is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. Advanced standing is not granted for work completed five or more years before application for admission or readmission.

REQUIREMENTS FOR THE CERTIFICATE

Plans of Study

In planning his program the candidate should give first consideration to his particular needs. If his study for the Master's degree was largely in professional education, he may need courses in his teaching field. If his Master's preparation was in a content field, he may need professional study.

The program must include, in addition to any prerequisites, a minimum of 30 hours of graduate credit, 24 hours of which must be in third-group courses (or the equivalent at other institutions). A maximum of 6 semester hours of graduate credit in second-group courses may be included and a minimum of 12 hours in courses offered by the School of Education must be included.

Residence

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of 18 semester hours in courses offered on the campus. The balance of the program may include courses in the Off-Campus Division of the College of General Studies or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request, a leave of absence is granted for a period not to exceed three years.

THE DEGREE OF DOCTOR OF EDUCATION

The School of Education offers programs of advanced study leading to the degree of Doctor of Education. These programs are under the supervision of the Committee on Graduate Studies and provide opportunities for study leading to the following

professional objectives: school superintendent, secondary school principal, elementary school principal, supervisor, director of guidance, director of curriculum development, professor of education, specialist in educational research, employee training, or adult education. All programs require study of interrelated areas of education as well as a doctoral dissertation in the major field of study.

Each program is divided into two parts. The first consists of preparation for and the passing of comprehensive examinations in each of four supporting fields and a major field of study. The second is composed of research investigation and the writing of a dissertation in the major field of interest and culminates in the final oral examination.

Detailed information on programs is provided in a separate publication obtainable on request.

ADMISSION

The applicant must possess adequate preparation for advanced study including graduate work in fields prerequisite to his objective equivalent to that required for the degree of Master of Arts in Education at this University, at least three years of successful pertinent educational experience, acceptable personal qualities, and a capacity for creative scholarship and effective leadership.

The applicant first arranges for an interview with the Assistant Dean for Advanced Graduate Studies to explore his needs in relation to the resources of the School of Education and to provide the guidance needed to proceed with an application for advanced study.

To be admitted to study for the degree, the applicant must be accepted by the Committee on Graduate Studies on the basis of (1) his previous scholastic and professional record; (2) the results of prescribed admission tests including the Aptitude Test of the Graduate Record Examination; (3) individual evaluation through personal conferences with at least three faculty members including the major professor under whom the applicant wishes to pursue his work; and (4) the outcome of a group interview with the Committee on Graduate Studies.

COMMITTEE ON GRADUATE STUDIES

The responsibility for selection of supporting and major fields rests with the candidate. Each applicant when he appears before the Committee on Graduate Studies should be prepared to present an outline of his plan of study including the selection of major and supporting fields and the tools of investigation needed for the completion of a doctoral dissertation. The tools may include one foreign language or more, statistical methods, or historical criticism. Candidates with less preparation than that normally required for a Bachelor's and Master's degree in Education must make up their deficiencies either prerequisite to or as part of their graduate work.

STUDY FOR THE MAJOR AND SUPPORTING FIELD EXAMINATIONS

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two to three years of full-time work, or the equivalent in part-time work, beyond the degree of Master of Arts in Education. Upon admission to study for the first part of a doctoral program the applicant is assigned to a Committee which prescribes and directs his studies. The Committee is composed of professors who will direct the student's work in the major and four

supporting fields. Preparation for and the passing of supporting field examinations precedes preparation for and taking the final examination in the major field.

A student is required to consult individually with supporting and major field professors in order to determine the requirements for each field of study and to receive guidance in preparation for each examination. Supporting field examinations are written and are six hours in length. The major field examination is twelve hours in length, six hours on each of two successive days. Upon satisfactory completion of all supporting and major field examinations the student, upon recommendation of the Commitee on Graduate Studies, is permitted to pursue the second part of his doctoral program.

THE DISSERTATION AND THE FINAL EXAMINATION

The student permitted to continue the second part of a doctoral program is assigned to a Master in Research, generally the major field adviser. Throughout the remainder of the program, the candidate is responsible solely to his Master in Research. Two additional faculty members assist the Master in reading the first draft of the candidate's dissertation. When the dissertation is considered acceptable, the Master recommends the candidate to the Dean for the final oral examination.

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination is conductd by a committee of the Faculty appointed by the Dean, supplemented by at least two leaders in the candidate's field of study from outside the University. The examination is open to the public. Candidates who successfully pass the oral examination are recommended for the degree by the Faculty of the School of Education.

RESIDENCE AND CONTINUOUS STUDY

All the preparation for the degree must be done in residence. The student must maintain continuous registration in the School of Education, except when the Committee on Graduate Studies has granted a leave of absence. Failure to maintain registration in each semester of the academic year may result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the Committee on Graduate Studies.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the minor and supporting field examinations or as a candidate engaged in doctoral research. The supporting and major field examinations, however, must be completed within five years of the date of admission and the entire program must be completed within eight years, regardless of full-time or part-time study. Each candidate is required to complete one semester or more of his program in full-time study. Full-time study in two nine-week Summer Sessions is equivalent to full-time study for one semester.

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

PROGRAMS IN GOVERNMENT AND BUSINESS

FACULTY AND STAFF OF INSTRUCTION*

A. M. Woodruff, *Dean;* L. W. Williams, *Assistant Dean*

Professors D. S. Brown, T. H. Carroll, J. C. Dockeray, R. B. Eastin, J. O. Eaton, R. F. Ericson, F. H. Gibbs, G. C. Jacobus, J. L. Jessup, A. R. Johnson, R. D. Kennedy, E. J. B. Lewis, G. L. Lippitt, Waldo Sommers, A. M. Woodruff

Professorial Lecturers S. N. Alexander, C. G. Berns, F. C. Brimacombe, J. L. Buckler, C. W. Clewlow, L. C. Collins, F. V. Demaret, L. W. Hamilton, Frank Higginbotham, C. E. Houston, Robert Kaye, J. L. Krieger, K. F. McClure, Edward McCrensky, C. A. McLaughlin, J. P. Murphy, M. E. Ogdon, J. M. Parrish, W. J. Peeples, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, K. E. Stromsem, Clark Tibbitts, W. G. Torpey

Associate Professors John Clayton *(Research)*, D. R. Cloutier, Leon Gintzig, F. C. Kurtz, Leonard Prestwich

Associate Professorial Lecturers H. M. Bain, Richard Bain, C. M. Campbell, O. C. Disler, J. F. Doubleday, C. E. Goode, George Idelson, V. B. Lewis, F. K. McTyier, J. A. Morrow, Ross Pollock, John Provan, J. R. Snitzler.

Assistant Professors B. B. Chandler, D. M. Faulkner, R. E. Griffiths, A. D. Larson, H. R. Page

Lecturers R. J. Bond, Jerome Bracken, C. J. Brinkman, D. K. Good, Donald Gross, F. X. McKenna, J. F. Regan, D. E. Russell, M. H. Schwartz, L. E. This, D. E. Van Tijn, P. C. Tosini

Instructor M. G. Gallagher

Associate J. K. Palmer

COMMITTEES†

DEAN'S COUNCIL

R. B. Eastin, F. H. Gibbs, A. R. Johnson, R. D. Kennedy, Waldo Sommers

COMMITTEE ON CURRICULUM AND PROGRAMS IN GOVERNMENT AND BUSINESS

J. C. Dockeray *(Chairman)*, R. B. Eastin, F. H. Gibbs, R. D. Kennedy, H. R. Page

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* Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty. Faculty and Staff of Instruction for the academic year 1962–63.

† The Dean and Assistant Dean of the School are members ex officio of all committees.

COMMITTEE ON DOCTORAL STUDIES IN BUSINESS ADMINISTRATION AND PUBLIC ADMINISTRATION

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COMMITTEE ON MANAGEMENT RESEARCH

J. C. Dockeray *(Chairman)*, E. H. Johnson, R. D. Kennedy, D. S. Watson

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Professorial Lecturers R. L. Garthoff, Hans Heymann, H. C. Hinton, Lothar Metzl, V. P. Petrov, T. W. Wolfe
Associate Professors R. S. Jordan, H. R. Ludden, J. N. Mosél, Benjamin Nimer, George Stambuk
Assistant Professor J. K. McDonald
Lecturers Bernard Ramundo, C. H. Slayman

COMMITTEES†

DEAN'S COUNCIL

W. H. Kraus, H. M. Merriman, Wilson Schmidt

COMMITTEE ON CURRICULUM AND PROGRAMS IN INTERNATIONAL AFFAIRS

J. W. Brewer, R. H. Davison, H. M. Merriman, H. R. Ludden, W. E. Schmidt

INTRODUCTORY

The School of Government, Business, and International Affairs was established in 1898 as the School of Comparative Jurisprudence and Diplomacy. In 1928 it was reorganized and broadened as the School of Government. During the next two decades the scope of the School broadened further with the addition of programs in

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† The Dean and Assistant Dean of the School are members ex officio of all committees.

business administration and public administration. In the same period the School gradually changed from primary emphasis on undergraduate study to emphasis on graduate work. In 1960 the name was changed to the School of Government, Business, and International Affairs.

The School offers undergraduate and graduate programs in various fields of Accounting, Business Administration, Business and Economic Statistics, International Affairs, and Public Affairs. Students in the freshman and sophomore years are registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University. Here they are assigned special advisers to assist them in planning their programs. Graduate work only is offered in the fields of Economic Policy, Health Care (including Hospital) Administration, Personnel Administration, and Public Administration.

OBJECTIVES

The School of Government, Business, and International Affairs offers programs to prepare men and women for careers in the conduct of international affairs, as well as programs to equip students for eventual senior administrative responsibility in business and government. The development of mid-career programs for executives has become a further objective of national significance.

The School was reorganized in 1960 in recognition of the growing interdependence of business and government at both the national and international levels. The programs in Government and Business include examination of administrative principles and the quantitative approaches to decision-making common to both business and government. These programs stress the points at which major policy decisions of either business or government must give consideraiton to related policy decisions of the other. Emphasis is placed upon the fact that management education is not limited to organizational techniques, but is, in its broadest sense, education for management responsibility.

International Affairs is an area of higher education in which programs have been offered by the School of Government, the predecessor of the present School, since its inception. These programs, based on the fundamentals of economics, history, politics, and law, also give recognition to the international impact of American business activity.

REGULATIONS

Regulations concerning Admission, Registration, Fees and Finances *are stated on pages 18–34; other University regulations, on pages 52–58.*

ATTENDANCE

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

INDEPENDENT STUDY PLAN

A student of *demonstrated capacity*, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an

instructor, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific course credits normally allowed when taken on a class basis.

THE BACHELOR'S DEGREES

The School offers programs leading to (1) the degree of Bachelor of Arts in Government with majors in International Affairs or Public Affairs and (2) the degree of Bachelor of Business Administration with majors in Accounting, Business Administration, and Business and Economic Statistics.

THE REQUIREMENTS FOR THE DEGREES

AMOUNT OF WORK

A full-time student not on probation may not ordinarily take more than 15 semester hours. A student employed more than 24 hours a week, who is not on probation, may not take more than 9 semester hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 18 semester hours. A student employed more than 24 hours a week, whose index is 3.50 or higher, may take up to 12 semester hours.

A student who accepts employment after registration or at any time during a semester must report immediately to the Dean, so that his program may be adjusted if necessary.

Exception to these rules will require the approval of the Dean.

SCHOLARSHIP

The system of grading and computing scholarship is described on pages 52–53.

In order to graduate, a student must have the following: (1) a general quality-point index of at least 2.00 and (2) an index in his major of at least 2.50. The major includes the required courses and courses taken in the group options.

Dean's Honor List

The names of students who achieve a quality-point index of 3.50 or higher are placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students registered for a minimum of 12 semester hours and (2) part-time students registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include the summer term.

Probation

A student must maintain a quality-point index of at least 2.00, or be placed on probation, where he remains as long as his index is below 2.00.

Suspension

A student whose index is 1.50 or below, or who is subject to probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the appropriate Dean's Council that during his absence from the University, he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the School of Government, Business, and International Affairs. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

GRADUATE RECORD EXAMINATION

All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the summer sessions should take the examination in the Spring Session.

By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools. Dates of the examinations are announced in the Calendar, page 7 and 8.

Each senior required to take the Graduate Record Examination must register for it in the office of the Dean when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

CURRICULUM REQUIREMENTS

To be recommended by the Faculty for graduation, candidates are required to complete, in addition to the appropriate freshman and sophomore work, a minimum of 60 semester hours during the junior and senior years, as set forth in one of the following curricula.

Examinations for Waiving Curriculum Requirements

A required course may be waived by the satisfactory passing of a waiver examination authorized and prescribed by the department or curriculum adviser concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Request to take the examination should be made to the curriculum adviser and the required fee paid at the Office of the Cashier before the date set for the examination.

BACHELOR OF ARTS IN GOVERNMENT

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Arts in Government with a major in International Affairs or Public Affairs. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
English	English 1 or 1X, 2	6
Foreign Language		12
Mathematics, Science	Biology 1–2*; Chemistry 3–4; Geology 1–2; Mathematics 3, 6; Physics 11, 12; or Statistics 51, 52	6 to 8
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Elective†	Students interested in Foreign Service include Geography 52	10 to 12
	Total	64

INTERNATIONAL AFFAIRS

REQUIRED—JUNIOR AND SENIOR YEARS

The International Affairs program is broad, covering international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

		Semester Hours
Econ 181–82	International Economics	6
Hist 181–82	Diplomatic History of the United States	6
Pol Sc 171	International Politics	
or Hist 150	European Diplomatic History since 1878	3
Pol Sc 172	International Organization: the United Nations	3

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
Pol Sc 181–82	International Law	6
Pol Sc 197	Proseminar in International Affairs; Strategies of Contemporary American Foreign Policy	3
Foreign Language	Composition and Conversation	6
Geography		3
Group Option	(To be selected from one of the following groups in consultation with adviser)	15
Elective		9
	Total	60

All International Affairs majors must complete the *required* courses listed above, plus the group option. Group option courses must be selected after consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

Group I—International Politics

Composed of courses in Political Science, History, and Geography concerned with the study of American diplomatic relations.

Group II—International Economics

Composed of courses in Economics, Business Adminstration, Geography, and Statistics concerned with the study of American economic, financial, and business relationships with foreign countries.

Group III—International Communications

Composed of courses in Political Science, Psychology, Sociology and Anthropology, and Journalism concerned with the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations. (It is recommended that the student include statistics in his freshman- and sophomore-year program.)

Group IV—Area or Regional Studies

Composed of courses in Economics, History, Political Science, and Geography. Integrated programs of study are available in the following regions or areas: Europe; Africa and the Middle East; Asia and the Pacific Area; the Soviet Orbit; and Latin America. Modifications and combinations of these areas may be made if approved by the adviser. The foreign language requirement should be met by a language suitable for study of the region or area selected.

PUBLIC AFFAIRS

REQUIRED—JUNIOR AND SENIOR YEARS

The Public Affairs program is a broad, composite curriculum dealing with domestic government and policy.

		Semester Hours
Econ 102	Economic Analysis	3
Econ 121	Money and Banking	3
Econ 161–62	Public Finance and Taxation	6
Hist 175–76	Political and Constitutional History of the United States	6
Pol Sc 121–22	The Constitution of the United States	3
Pol Sc 145	Political Parties and Politics	3
Pol Sc 151	Public Administration	3
Group Option	(To be selected from one of the following groups in consultation with the adviser)	12
Elective		18
	Total	60

All Public Affairs majors must complete the *required* courses listed above. The group options provide specialization. Modifications and substitutions may be made when appropriate or necessary provided the consent of the adviser is obtained.

Group I—Economics Option

		Semester Hours
Econ 101	Economic Analysis	3
Econ 104	History of Economic Thought	3
Econ 105	Business Cycles	3
Econ 165	Government Control of Economic Activity	3
	Total	12

Group II—Politics Option

Pol Sc 104	State and Local Governments	3
Pol Sc 111	Introduction to Comparative Government and Politics	3
Pol Sc 120	Foundations of American Democracy	3
Pol Sc 146	Political Pressures and Public Reactions	3
	Total	12

BACHELOR OF BUSINESS ADMINISTRATION

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Business Administration with a major in Accounting or Business Administration. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
Accounting	Accounting 1–2	6
English Composition	English 1 or 1X, 2	6
*Foreign Language or Literature	English 51–52, 71–72, 91–92; French 3–4 or 51–52; German 3–4 or 51–52; Russian 3–4 or 91–92; Spanish 3–4 or 51–52	6
Mathematics	Mathematics 15, 16	6
Science	Biology 1–2†; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; or Physics 11, 12	6–8
Social Studies	Economics 1–2	6
	Political Science 9–10	6
	Psychology 1	3
	Anthropology 1, Sociology 2, or Psychology 8	3
Statistics	Statistics 51	3
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Elective‡	(Speech is recommended, students interested in Foreign Commerce include Geography 52)	7–9
	Total	64

*This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

†An interdepartmental course offered by the departments of Botany and Zoology.

‡Credit is not given for courses elected in Physical Education or Secretarial Studies.

ACCOUNTING

Programs are offered in three areas of professional specialization: (1) Managerial Accounting in Business; (2) Federal Financial Management—Accounting and Budgeting; and (3) Public Accounting.

REQUIRED—JUNIOR AND SENIOR YEARS		Semester Hours
Acct 101	Cost Accounting	3
Acct 121–22	Intermediate Accounting	6
Acct 161	Income Tax Accounting	3
Acct 171	Auditing	3
BA 102	Fundamentals of Management	3
BA 131	Business Finance	3
BA 161	Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3
Econ 121	Money and Banking	3
		30
Area of Professional Specialization		15
Elective	(Exclusive of Accounting courses, not more than 6 hours may be taken in a single department)	15
	Total	60

All Accounting majors must complete the *required* courses listed above, plus one of the following areas of professional specialization. Special programs may be arranged in consultation with the Department of Government and Business.

Group I—Managerial Accounting in Business

Students preparing for careers in managerial accounting in business may specialize in a particular area of accounting, such as systems, cost, budgeting, or tax, or preferably, may concentrate on broadening their backgrounds in business administration or in more general fields of knowledge. The Managerial Accounting in Business Program thus provides maximum flexibility for students who wish to combine basic training in accounting with other career interests, either in preparation for general business responsibilities or in preparation for a more specific career in the financial management field.

	Semester Hours
Courses relating to Managerial Accounting selected with the approval of the adviser (may not include Accounting courses in excess of 9 hours)	15

Group II—Federal Financial Management—Accounting and Budgeting

Students preparing for careers in financial management in the Federal Government may combine basic professional training in accounting with more specialized training in the financial management techniques used in administering the complex affairs of modern-day government. A flexible program can be developed in keeping with the specific career objectives of the individual student by the careful selection of electives.

	Semester Hours
Courses relating to Federal Financial Management to be selected with approval of the adviser (may not include Accounting courses in excess of 9 hours)	15

Group III—Public Accounting

The Public Accounting Program is a concentrated professional curriculum designed to prepare students for careers in public accounting and the Certified Public Accountants examination. It combines the maximum number of professional accounting courses consistent with the broad educational background essential to successful Accounting careers in the modern business world.

	Semester Hours
Courses relating to Public Accounting to be selected with approval of adviser.....	15

BUSINESS ADMINISTRATION

The program in Business Administration is designed to provide the broad foundation required for eventual top leadership in either governmental or business administration. The following 30 semester hours are normally required. In addition students take 15 semester hours in one of the group options and 15 hours of electives, which normally are advanced courses in liberal arts subjects.

REQUIRED—JUNIOR AND SENIOR YEARS

		Semester Hours
BA 101	Introduction to Business	3
BA 102	Fundamentals of Management	3
BA 105	Personnel Management	3
BA 131	Business Finance	3
BA 141	Basic Marketing	3
BA 161	Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3
BA 198	Case Problems in Management	3
Acct 193	Business Budgeting	3
Econ 121	Money and Banking	3
		30
Group Option (to be selected from one of the following groups)		15
Elective (to be selected in consultation with the adviser)		15
	Total	60

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

All Business Administration majors must complete the *required* courses listed above, plus the group option. Selection of group option courses must be made in consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

Composed of courses in Accounting, Business Administration, Economics, and Statistics.

Group II—Personnel

Composed of courses in Business Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

Composed of courses in Accounting, Business Administration, Economics, Political Science, and Statistics.

Group IV—Marketing, Procurement, and Production

Composed of courses in Business Administration, Economics, Geography, and Statistics.

Group V—Controllership

Composed of courses in Accounting, Business Administration, and Economics.

Group VI—Economics

Composed of courses in Economics and Business Administration.

Group VII—Statistics

Composed of courses in Statistics.

Group VIII—Transportation and Public Utilities

Composed of courses in Business Administration, Economics, Geography, History, and Statistics.

Group IX—Automatic Data Processing

Composed of courses in Accounting, Applied Science, Business Administration, Economics, Engineering, Mathematics, and Statistics.

BUSINESS AND ECONOMIC STATISTICS

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Business Administration with a major in Business and Economic Statistics. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
Accounting	Accounting 1–2	6
Economics	Economics 1–2	6
English	English 1 or 1X, 2	6
Foreign Language		12
Mathematics	Mathematics 21, 22, 23	9
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Political Science	Political Science 9–10	6
or Philosophy	Philosophy 51–52	6
Statistics	Statistics 51 or 91, 52	9
Elective*		6
	Total	64

REQUIRED—JUNIOR AND SENIOR YEARS

The undergraduate program in Business and Economic Statistics is designed as preparation for business and economic analysis, with 30 semester hours of requirements and 30 semester hours of electives from Accounting, Business Administration, Economics, and Statistics.

		Semester Hours
BA 101	Introduction to Business	3
BA 102	Fundamentals of Management	3
BA 131	Business Finance	3
or 141	Basic Marketing	3
BA 161	Commercial Law: Contracts, Sales, Agency, Bailments	3
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
Econ 101–2	Economic Analysis	6
Econ 105	Business Cycles	3
Stat 111–12	Business and Economic Statistics I–II	6
Elective (A), (To be selected from Statistics)		18
Elective (B)		12
	Total	60

THE MASTER'S DEGREES

Master of Arts in Government

Programs leading to the degree of Master of Arts in Government are offered in the following fields:

Public Administration
Public Affairs
International Affairs
Economic Policy
Business and Economic Statistics
Personnel Administration

Master of Business Administration

Programs leading to the degree of Master of Business Administration are offered in the following fields:

Accounting
Business Administration
Health Care (including Hospital) Administration
Personnel Administration

Master of Public Administration

Programs leading to the degree of Master of Public Administration are offered in the fields of Public Administration and Personnel Administration.

GENERAL REQUIREMENTS

A 3.00 average in the undergraduate major is normally required for admission to graduate study. Deficiency in undergraduate preparation may be satisfied by (1) taking specified undergraduate courses and maintaining a 3.00 average in such courses or (2) passing a comprehensive examination in the major field. The comprehensive examination may be taken only with the Dean's approval upon recommendation of the curriculum adviser.

Master's degrees are awarded by vote of the Faculty concerned on completion of the required course work, an acceptable thesis or the equivalent, and the passing of the comprehensive examination. An applicant whose background does not include

the necessary courses or equivalent work experience must take a program longer than the minimum hours required.

In addition to any course examination, the candidate must pass comprehensive written examinations in his major field. These examinations are scheduled two or more times a year (usually in December and in April), and should be taken during the last semester of course registration or shortly after the completion of the prescribed course work. The candidate must consult with his adviser, well in advance, as to the date of his examination and the definition of the subject-matter fields which this examination is to cover. An oral examination on his thesis or major report may also be required.

Second-group courses (numbered 101–200) may be counted toward the Master's degree, only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

All work for a Master's degree must be completed in five years, unless an extension of time is granted by the Dean.

A student who expects to continue his studies for the degree of Doctor of Philosophy (Graduate Council), Doctor of Business Administration, or Doctor of Public Administration, after receiving the Master's degree, will be assisted in planning his program so that he may qualify for admission to candidacy for the Doctorate.

No credit is granted for work done *in absentia* or without formal instruction, except for hospital residency and the thesis, which may be completed *in absentia* with the permission of the department, curriculum adviser, or committee concerned.

SCHOLARSHIP

Grades for graduate work are *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), and *I* (incomplete). A minimum of 6 of the required semester hours of course work completed in the Master's program must be graded *E*.

A Master's candidate who has accumulated more than 6 semester hours of *U* will be automatically suspended.

REQUIRED COURSES IN ADMINISTRATION
(Certain Fields)

Breadth and background in general administrative theory and practice are provided by the following courses, which are *required* of all Master's candidates in the fields of Public Administration, Business Administration, Health Care (including Hospital) Administration, and Personnel Administration.

BPA 201 Advanced Administrative Management (3)
BPA 204 Quantitative Factors in Administration (3)
BPA 207 Human Relations in Administration (3)

In addition, each student is normally required to take one of the following courses appropriate to his specific area of concentration:

BA 297 Case Studies in Business Administration (3)
HCA 206 Case Studies in Health Care Administration (3)
PA 298 Case Studies in Public Administration (3)

THE THESIS

The thesis subject should be selected as early as possible so as to permit effective integration with the course work.

The subject must be approved by the professor in charge and recorded in the Office of the Dean by the date announced in the calendar. The thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period, the student must register and pay tuition as for a repeated course.

MASTER OF ARTS IN GOVERNMENT

Curricula leading to the degree of Master of Arts in Government are available in the fields of Public Administration, Public Affairs, International Affairs, Economic Policy, Business and Economic Statistics, and Personnel Administration.

The programs leading to this degree require a minimum of 30 semester hours of work, including 24 hours of course work and a thesis equivalent to 6 semester hours. During recent years, most individual student programs have exceeded 30 hours, dependent upon the undergraduate major and other prerequisites.

Second-group courses (numbered 101–200) may be counted toward the Master's degree up to a maximum of 12 hours, but only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

LANGUAGE REQUIREMENTS

(Certain Fields)

A candidate for the degree of Master of Arts in Government with a major in Economic Policy, International Affairs, or Public Affairs must show that he has a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. The language examination should be taken before the student begins the second 15 hours of his work. No student may take the examination after three unsuccessful attempts.

PUBLIC ADMINISTRATION

(See also the professional degree, Master of Public Administration, pages 164–65.)

Prerequisite: an undergraduate background in social science or business administration, or equivalent work experience.

The course work is planned with an adviser and must include the *required* courses on page 158.

There are in addition two required areas of study (1) Public Administration Programs and Policy and (2) Public Administration Methods and Procedures. The third field of study may be selected by the student from offerings which include General Management, Public Personnel Administration, Human Relations, Data Processing, Economics, Accounting, and Statistics.

The remaining 6 semester hours in the program, Public Administration 299–300, represent the major research project and preparation of the thesis.

PUBLIC AFFAIRS

Prerequisite: an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in the undergraduate Public Affairs Curriculum, as stated on pages 152–53 must be made up.

The language requirement, page 159, must be satisfied.

The program in Public Affairs is offered in two fields of specialization: Domestic Economics and Domestic Politics.

Recommended for Domestic Economics: courses in economic development, economic policy, public finance, and national income.

Recommended for Domestic Politics: courses in United States social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion.

INTERNATIONAL AFFAIRS

Prerequisite: the applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University. (See pages 151–52.)

Any omissions in the applicant's former program must be made up by appropriate courses in addition to the requirements for the Master's degree.

The language requirement, page 159, must be satisfied.

The program in International Affairs is offered in five fields of specialization: International Economics, International Politics, International Communications, Regional Studies, and Sino-Soviet Studies.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Economics, History, Political Science, Geography, Psychology, and Sociology and Anthropology.

Group I—International Economics

Graduate courses in economics (numbered over 200) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

Group II—International Politics

Graduate courses in political science and history (numbered over 200), in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

Group III—International Communications

Graduate courses (numbered over 200) in political science, psychology, sociology and anthropology, and geography with 12 hours (one-half of the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

Group IV—Regional Studies

Graduate courses in economics, political science, history, and geography (numbered over 200) dealing with a geographic region, such as Latin America; Europe; Africa and the Middle East; Asia; the Soviet Orbit (see Institute for Sino-Soviet Studies, page 168); or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

Group V—Sino-Soviet Studies

The Institute for Sino-Soviet Studies provides a program of inter-disciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Movement. Graduate studies under the auspices of the Institute are available to qualified students. Courses and seminars are designed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major Communist powers. (See page 168.)

ECONOMIC POLICY

Prerequisite: an undergraduate major in economics or the equivalent.

The 30 hours of course work must include Economics 210, 265–66; and the thesis, Economics 299–300.

The language requirement, page 159, must be satisfied.

Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

BUSINESS AND ECONOMIC STATISTICS

Prerequisite: an undergraduate major in Business and Economic Statistics, or the equivalent; such work must include a minimum of 24 semester hours of second-group courses in Statistics and a minimum of 10 semester hours in second-group courses in Accounting, Business Administration, and Economics.

This program requires at least 12 semester hours of graduate courses in Statistics. The remaining courses are to be selected from graduate offerings in accounting, business administration, economics, public administration, and statistics with the approval of the adviser. A thesis equivalent to 6 semester hours is required.

PERSONNEL ADMINISTRATION

The program in personnel administration leads to the degree of Master of Arts in Government, to the degree of Master of Public Administration (if elective courses are directed toward Public Administration), or to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration).

The course work must include the *required* courses on page 158 and the thesis

(Business Administration 299–300 or Public Administration 299–300). Each individual student program is arranged in consultation with a curriculum adviser.

MASTER OF BUSINESS ADMINISTRATION

Curricula leading to the professional degree of Master of Business Administration are available in the fields of Accounting, Business Administration, Health Care (including Hospital) Administration, and Personnel Administration.

The purpose of the programs leading to the degree of Master of Business Administration is to develop the analytical ability and perspective which will contribute to success as a responsible executive. Because of the increasingly close relationship between government and business, these programs also provide an excellent background for many government careers. In order to provide maximum flexibility, each student program is planned with an adviser.

An applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the comprehensive examination, and the submission of an acceptable thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis; and students with *no* previous background in business administration or accounting are rarely advised to take the comprehensive examination before completing 54 hours of course work. Students who have an undergraduate background in either business administration or accounting, however, are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. A student who has completed an undergraduate major in accounting or in business administration with a good record may qualify under a minimum acceptable program of 30 hours, including the thesis. No more than 6 hours of graduate course credits can be transferred from other institutions and each transfer of credit must be approved by the Dean.

ACCOUNTING

The Master's program in accounting is designed (1) for those who wish to pursue careers as professional accountants, (2) for those who wish to pursue careers of executive responsibility with emphasis on finance and accounting in either business or government, and (3) for those who wish to pursue careers as teachers of accounting. This program is sufficiently flexible to meet individual student objectives; selection of courses is made in consultation with the adviser. The program is available in three basic areas, professional accounting (preparing for C.P.A. designation), governmental accounting, and managerial accounting.

BUSINESS ADMINISTRATION

The Master of Business Administration program is designed for those who wish to pursue responsible careers as administrators in either government or business.

Individual programs are planned in consultation with the adviser to fit the professional objectives of the student. The course work must include the *required* courses, page 158. Elective fields of study include Administrative Theory and Practice; Personnel Management; Finance; Foreign Commerce; Marketing, Procurement, and Production; Controllership; and Transportation and Public Utilities.

A special program is provided in Automatic Data Processing. Courses are selected in consultation with an adviser.

HEALTH CARE (INCLUDING HOSPITAL) ADMINISTRATION

The graduate programs in Health Care Administration lead to the degree of Master of Business Administration. The two principal areas of concentration deal with the administration of (1) hospitals and (2) long-term facilities such as chronic disease hospitals, nursing homes, and homes for the aged.

HOSPITAL ADMINISTRATION

This graduate program is designed to help prepare students who aim for leadership in hospital administration. Its curriculum is planned to give students an opportunity to acquire the knowledge, attitudes, and skills which will provide a foundation for their growth into capable administrators of hospitals and related institutions.

Work for the degree is divided into two phases. During the first phase a minimum of 36 semester hours of academic courses, including the required courses on page 158 and other courses adapted in accordance with each student's background needs, must be completed satisfactorily. These courses cover the general and technical background of health care administration; general administrative theory and practice; and problem solving in the area of management as it relates to general and special hospitals (including mental hospitals) and long-term care facilities (including nursing homes and similar institutions).

The second phase requires at least a full calendar year of on-the-job institutional training under qualified supervision. Students may not enter this phase until they have completed the requirements in phase one. During phase two, each student will be required to complete a major report. This written report will count as part of the 9 semester hours required for this phase. Selected students will take an additional 9 hours covering a full second year of residency. By special permission, additional research and course work may be substituted for a part of the clinical training. Each program is made out for the individual student in accordance with his experience, needs, and aims.

Full-time students should complete both phases for the degree in twenty-one months; part-time students in thirty-six months. Under special circumstances additional time may be granted. No student will be admitted who does not plan to complete the entire program.

Prerequisite: a Bachelor's degree from an accredited college or university. While a 3.0 (*B*) average in the undergraduate major is expected, considerable weight will be given in the selection of candidates to personal qualifications, aptitude for Health Care Administration, and practical experience.

Although students may be accepted with majors in any undergraduate field, a desirable background would include courses in accounting, biology, business administration, economics, psychology, sociology, and statistics. One-semester courses in accounting and statistics must be taken prior to admission as a full-time graduate student. Applicants with academic deficiencies may be permitted to enroll as special students subject to the satisfactory completion of prescribed courses beyond the minimum requirements for admission.

In this program, the following courses must be taken:

		Semester Hours
HCA 202	Introduction to Health Care Administration	3
HCA 203–4	Organization and Management I–II	6
HCA 205	Hospital Management Procedures	3
HCA 207	Management Analysis in Health Care Institutions	3
HCA 209	Health Care Economics	3
•HCA 293–94–95	Residency I	9
Required	(See *Required* Courses, page 158)	12
Elective		6
	Total	45

ADMINISTRATION OF LONG-TERM CARE FACILITIES

The graduate work in the administration of long-term care facilities, such as chronic disease hospitals, nursing homes, and mental hospitals, uses the same basic curriculum as the program in Hospital Administration. Appropriate courses are substituted for those specific to Hospital Administration. The one-year residency is performed in one or more facilities for long-term care.

Requirements for admission to study in Long-term-care Administration are the same as those for Hospital Administration

Special Courses in Long-term-care Administration

The additional courses from which selection can be made by those wishing to study Long-term-care Administration are:

		Semester Hours
HCA 250	Administration for Mental Care	3
HCA 260	Administration for Long-term Care	3
HCA 261	Business Procedure in Long-term-care Facilities	3
HCA 262–63	Readings in Long-term-care Administration	6
HCA 267	Social Gerontology for the Administrator	3

PERSONNEL ADMINISTRATION

The field of Personnel Administration is described on pages 161–62 and may lead to the degree of Master of Arts in Government, Master of Business Administration, or Master of Public Administration.

MASTER OF PUBLIC ADMINISTRATION

The purpose of the program leading to the Master of Public Administration, a professional degree, is to prepare graduates for positions of responsibility in the public service. Each applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the comprehensive examination, and the submission of an acceptable thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis; and students with no previous background in public administration are rarely ad-

• The student must register for 3 semester hours of residency at the end of the first phase and before he leaves the University for his residency hospital. Registration for 1964–65 will be held May 29, 1964.

vised to take the comprehensive examination before completing 54 hours of course work. Students who have undergraduate backgrounds in political science or history, or equivalent career experience, however, are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. The minimum acceptable program is 30 hours; and students who have completed the Public Affairs undergraduate major at The George Washington University, or its equivalent, with good records, may complete the requirements for the degree of Master of Public Administration within a 30-hour minimum, including the thesis. No more than 6 hours of graduate credit can be transferred from other institutions; and each transfer of credit must be approved by the Dean.

The course work must include the *required* courses listed on page 158. Other courses, selected with the approval of the adviser, should be concerned with selected fields of administration in government and related social and economic factors. The thesis, which may be a major case study, is prepared under the guidance of an appointed Faculty director.

The following areas of study are open to candidates for the degree of Master of Public Administration: Governmental Budgeting, Fiscal Management, Public Personnel Management, Human Relations in Administration, Business-Government Relations, and Data Processing and Systems Management.

A special program is provided in Urban Affairs, designed to prepare graduates for effective work in positions that deal with the complete problem of metropolitan areas. Stress is placed upon gaining a broad understanding of the nature and structure of the city—particularly that of the super-city as it is developing today—and upon administrative theory. Programs in Urban Affairs are arranged in consultation with the adviser.

The field of Personnel Administration is described on pages 161–62 and may lead to the degree of Master of Arts in Government, Master of Business Administration, or Master of Public Administration.

DOCTORAL STUDY

Work for the degrees of Doctor of Business Administration and Doctor of Public Administration is under the supervision of the Committee on Doctoral Studies.

An applicant must have the degree of Master of Business Administration or Master of Public Administration, as appropriate; Master of Arts in an approved field; or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examinations in two tools of research, chosen as the individual program dictates from the following: statistical methodology, accounting, reading and English translation ability in a modern foreign language, research methodology in the social sciences, research methodology in the engineering and physical sciences, and cartography. Other tool subjects may be substituted in accordance with the needs of individual programs.

The Committee on Doctoral Studies, in consultation with the applicant, will (1) designate six fields of study selected from the broad areas of Business Administra-

tion, Health Care Administration, Public Administration, and Economics, and (2) appoint an adviser to guide the student in his work in these fields. Most students will complete 30 semester hours in graduate courses and such additional course work as may be prescribed by the adviser; but each program is individually arranged in light of the student's background.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination in the fields of study previously designated, the examination will be scheduled during the following January or May.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

THE DISSERTATION

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertation, which are rigidly enforced. The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE FINAL EXAMINATION

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration or Doctor of Public Administration by the Committee on Doctoral Studies.

The degree of Doctor of Philosophy in the field of International Relations is offered in the Graduate Council of the University. The Doctoral program in this field includes work in economics, history, and political science. Students working towards the degree of Doctor of Philosophy in the fields of Political Science, History, and Economics can arrange concentrations in various aspects of international affairs. Requirements for the degree of Doctor of Philosophy are stated on pages 80–93.

SPECIAL PROGRAMS

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in government career service. Each scholarship provides a tuition-free course of 3 hours a semester and appropriate academic credit (up to 6 semester hours) for the successful completion of training assignments required in any agency in which the training program has been evaluated by the University.

The Navy Graduate Financial Management Program, sponsored by the Naval Postgraduate School, provides 50 semester hours of work in financial management and related fields for a selected group of Naval and Marine officers. The Master's degree is awarded upon successful completion of this full-year program.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields for a selected group of Air Force officers. Most of the officers receive the Master of Arts degree upon successful completion of this full-year program.

The School of Government, Business, and International Affairs cooperates with the College of General Studies in the Off-Campus programs of that College, particularly in the fields of accounting, business administration, controllership, governmental administration, international affairs, and personnel administration. Special Master's degree programs have been established by the College of General Studies in cooperation with the School of Government, Business, and International Affairs for the students and faculty of the Army War College, Carlisle Barracks, Pennsylvania; the Air War College and the Command and Staff College, Air University, Maxwell Air Force Base, Alabama; the Industrial College of the Armed Forces and the National War College, Fort McNair, Washington, D. C.; and the Naval War College, Newport, Rhode Island. These programs lead to the degrees of Master of Arts in International Affairs, Master of International Affairs, Master of Business Administration, and Master of Public Administration.

CENTER FOR THE BEHAVIORAL SCIENCES

The Center, administratively related to the School of Government, Business, and International Affairs, was established as an inter-departmental and inter-disciplinary organization for encouraging behavioral science research, projects, and programs. Projects are sponsored and financed by foundations, governmental agencies, private organizations, and individuals.

A Faculty Executive Committee gives University supervision, and a nation-wide Advisory Board provides policy recommendations for long-range planning. Faculty members and students participate in the research activities of the Center for the Behavioral Sciences.

Results of research studies and related projects are reported through a publication program of the Center. A two-week Laboratory utilizing sensitivity training is sponsored annually by the Center and the College of General Studies in cooperation with the National Training Laboratories of the National Education Association.

THE MANAGEMENT RESEARCH GROUP

The Management Research Group seeks to serve government and industry and commerce by contributing to the development and understanding of basic theory in the field of management. The Group also provides assistance in translating theory into practice.

Relationships and techniques important to modern information flow and managerial decision-making are stressed. The research conducted extends to system design, analysis of system performance, and the evaluation of practice in relation to managerial criteria.

INSTITUTE FOR SINO-SOVIET STUDIES

The Institute for Sino-Soviet Studies provides a program of inter-disciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Movement. The Institute also conducts integrated research on the ideological, political, economic, sociological, psychological, geographic, legal, and military aspects of Communism and Communist political systems, especially as manifested in the Soviet Union and Communist China.

Graduate studies under the auspices of the Institute are available to qualified students. Appropriate specialization, geographic and otherwise, is encouraged, but will be built upon a firm foundation of integrated research and training.

Students may pursue courses of study leading to the degrees of Master of Arts in Government in the field of International Affairs or Doctor of Philosophy (offered by the Graduate Council).

Courses and seminars are designed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major Communist powers. This approach is necessary in order to capture the full dimensions of the past, present, and future of the Communist movement, and to demonstrate how this movement affects the attitudes and policies of the major Communist nations. Using a multi-disciplinary approach, it is hoped that students will understand more fully the nature of the protracted conflict which confronts the free world.

Russian language courses are offered by the Department of Slavic Languages and Literatures. Chinese language (Mandarin) will be offered by special arrangement.

THE COLLEGE OF GENERAL STUDIES *

G. L. Angel, *Dean;* R. W. Eller, *Assistant Dean;* J. G. Brown, *Director, Off-Campus Division;* D. T. McNelis, *Director, Campus Division;* R. C. Burns, *Director, Institutes, Conferences, and Special Programs;* Mary Coleman, *Director, Reading Clinic;* Lillian Quigley, *Director, College of General Studies Community Services Programs;* C. E. Galbreath, *Coordinator of Programs, Army War College Center, Carlisle Barracks, Pa.;* J. L. B. Atkinson, *Coordinator of Programs, Air University Center, Maxwell Air Force Base, Ala.;* H. M. Stout, *Coordinator of Programs, Naval War College Center, Newport, R. I.;* Murdock Head, *Director, Center for International Conferences, Airlie House, Warrenton, Va.*

STAFF OF INSTRUCTION†

SEPTEMBER 1961–AUGUST 1962

Professors J. G. Allee, Jr., G. L. Angel, J. L. B. Atkinson, J. W. Brewer, Elizabeth Burtner, R. D. Campbell, W. T. Carroll, J. H. Coberly, J. C. Dockeray, R. B. Eastin, J. O. Eaton, D. C. Faith *(Emeritus)*, C. E. Galbreath, F. H. Gibbs, G. F. Henigan, T. W. Holland, A. C. LaBue, G. E. McSpadden, Florence Mears, B. S. Root, Waldo Sommers, W. L. Tayler, F. S. Tupper

Professorial Lecturers Charles Berns, F. G. Brown, J. L. Buckler, Meredith Burrill, Donald Church, C. W. Clewlow, V. H. Cohen, G. C. Dildine, Eric Fischer, W. G. Held, H. F. Hubbard, J. L. Krieger, J. T. Lowe, H. M. Loy, E. J. Mahoney, Edward McCrensky, J. P. Murphy, M. T. Newman, V. P. Petrov, J. R. Probert, O. P. South, J. C. Stephens, Leon Swell, Ruth Tiedeman, Arthur Uscher, W. A. Vogely, C. N. Weems, K. R. Whiting

Associate Professors R. E. Baker, C. R. Crowe, Eva Johnson, R. S. Jordan, Lee Bielski, Virginia Kirkbride, F. C. Kurtz, H. R. Ludden, G. E. Mazzeo, W. A. McCauley, Muriel McClanahan, C. Y. Meade, Benjamin Nimer, Leonard Prestwich, Martha Rashid, Carol St. Cyr, L. E. Schlesinger *(Research)*, Mildred Shott, J. W. Skinner, R. W. Stephens

Associate Professorial Lecturers J. R. Ahern, R. J. Alexander, L. J. Ashley, C. L. Berg, R. H. Bloomer, K. H. Bradt, J. G. Brown, R. H. Brown, W. D. Butts, B. D. Causey, Jr., G. A. Christenson, J. G. Colmen, Beverly Crump, R. G. Cutler, A. F. Czajkowski, G. B. DeGennaro, O. C. Disler, J. F. Doubleday, P. C. Dunleavy, Seneca Eldredge, W. J. Elsen, C. E. Goode, Samuel Kavruck, D. G. Kousoulas, Olen Kraus, C. J. Lindley, J. V. Milano, Helen Mitchell, J. U. Mowll, B. H. Patterson, R. H. Pennington, W. R. Perl, Ross Pollock, Richard Powers, Fern Schneider, Wolfgang Schwarz, William Spencer, E. A. Turpin, Ouida Upchurch, J. H. White, Hazel Wilson, C. P. Wolle

Assistant Professors R. R. Bonato *(Research)*, J. G. Boswell, R. W. Eller, D. M.

* This listing of Administrative Officers is for 1962–63.
† Rank shown as of September 1, 1962.

Faulkner, P. F. Gallagher, P. P. Hill, A. D. Larson, Carlos Lozano, J. K. McDonald, Vadim Medish, J. L. Metivier, Jr., R. E. Nolan, W. A. Smith, Nancy Tischler

Lecturers S. R. Allen, W. E. Amos, N. A. Anderson, H. D. Arnett, J. J. Bean, R. A. Bradley, J. F. Brandenburg, F. W. Brecher, Sonia Brenner, C. E. Brett, C. J. Brinkman, M. N. Brinkman, E. F. Brown, Leon Burnham, S. F. Carter, R. G. Chadbourne, J. J. Champney, Natalie Clarkson, D. W. Cole, H. J. Connery, Joyce Cserpak, Edwin Deckard, T. A. Durek, D. E. Eggleston, S. J. Fanning, H. W. Forbes, S. L. Freud, Sidney Friedman, H. D. Gardner, R. M. Gelman, David Gold, Cora Goldsborough, Sidney Goldstein, D. C. Goodrich, H. L. Grigsby, Gratia Grove, B. A. Hammack, R. M. Harper, J. V. Harvester, Karl Itkin, D. H. Janz, C. P. N. Jensen, W. L. Jesse, W. O. Jewell, W. L. Johanek, C. E. Johnson, K. E. Joye, J. F. Kelly, A. H. Kerr, Jr., A. D. Kirsch, Charlotte Kramer, Claudio Krieghoff, A. R. Laney, Jr., J. M. Laudenslager, P. W. Leach, Frank Leis, Millard LesCallette, Joseph Lima, Margot Louria, R. A. Lucas, H. S. Lum, W. E. Maloney, E. J. Mansmann, Jr., J. L. Mastran, Jean McKinley, J. L. McNeal, C. R. McNutt, J. D. Mcpherson, G. C. Meyer, W. S. Miller, Sidney Mintz, J. E. Mock, R. E. Moore, W. B. Newton, Jr., H. F. Noble, Jr., D. E. Oppert, Morgan Organt, Ruth Osborn, D. E. Park, Jr., Theodore Polydoroff, D. H. Pritchard, Robert Raful, R. R. Randall, A. L. Riggs, R. M. Roth, T. H. K. Russell, R. E. Sears, E. J. Shaughnessy, K. A. Shutts, M. J. Slonim, H. L. Smock, W. K. Stahlman, C. J. Stringer, Jr., F. J. Sullivan, L. C. Taynton, T. C. Thomas, A. E. Tiemann, T. C. Trippe, Jr., G. E. Unger, George Ureke, D. E. Van Tijn, Paul Wakefield, J. R. Wason, W. K. Watson, D. J. Weidman, W. G. Wells, Jr., S. R. Westerlund, Robert Wolfe, J. F. Wood, W. P. Young

Special Lecturers in the College of General Studies R. D. Beckey, Paul Benoit, France Brodey, M. J. Brown, H. J. Civiello, P. R. Daniels, Joseph Feith, G. M. Ferris, Jr., C. H. McCall, Jr., B. L. Miles, C. A. Murphy, Barbara Nolen, J. R. Reed, B. B. Sibert, Orlando Stallings, Guillermina Supervía, Jeannette Veatch, S. P. Verret, M. M. Walter, L. E. White

Associates N. A. Adams, L. M. Allison, Jr., Julian Bartolini, S. A. Batrawi, Bernard Beer, Dorothy Brewer, Sandra Brotman, Yvonne Bush, J. N. Chapman, Stephen Chreptak, R. W. Delp, A. B. DePasquale, W. P. DeWitt, Florene DiServio, W. E. Elrod, Jr., A. H. Furnia, W. D. Gerhard, J. L. Gibney, Woodrow Harrison, W. E. Hart, J. F. Hayes, W. P. Henke, Alois Herrmann, E. K. Hertzler, J. D. Kazar, Jr., Richard Keshian, F. C. Latham, Lottie Lisle, A. T. Mace, H. A. Macintire, P. J. Mason, W. C. Mathews, F. W. Mathewson, Mabel McGrath, R. W. Mendenhall, E. C. Miller, S. C. Mohler, S. A. Morgenstein, C. V. Morris, Chester Myslicki, Virgil Ney, C. E. Olson, J. S. Orlick, K. H. Peter, A. J. Potts, R. J. Richards, Jr., A. G. Rose III, Alfonso Sapia-Bosch, Sally Shames, W. R. Shanahan, Boris Sheleg, E. M. Soler, T. A. Stanhope, R. B. Stevens, D. E. J. Stewart, J. T. Suter, W. J. Tennant, W. R. Throckmorton, R. H. Walther, D. F. White

COMMITTEES*

THE DEAN'S COUNCIL†

J. C. Dockeray, A. R. Johnson, R. H. Moore, B. S. Root, B. D. Van Evera, C. H. Walther

* The Dean and Assistant Dean are members ex officio of all committees.
† The Dean of Faculties, the Dean and Assistant Dean of the College are members ex officio of the Council.

COMMITTEE ON UNDERGRADUATE ADMISSION AND ADVANCED STANDING

G. L. Angel *(Chairman)*, R. J. Alexander, W. G. Clubb, J. W. Harkness, L. P. Leggette, J. Y. Ruth (ex officio)

COMMITTEE ON GRADUATE STUDIES

G. L. Angel *(Chairman)*, J. W. Brewer, J. C. Dockeray, J. L. Jessup, A. R. Johnson, Waldo Sommers, J. Y. Ruth (ex officio)

COMMITTEE ON SCHOLARSHIP

R. W. Eller *(Chairman)*, H. G. Detwiler, R. B. Eastin, Florence Mears, F. R. Houser (ex officio)

COMMITTEE ON DEVELOPMENT, CURRICULUM, AND PROGRAMS

B. D. Van Evera *(Chairman)*, J. H. Coberly, R. W. Stephens

GENERAL INFORMATION

The College of General Studies was established in 1950. The objectives of the College are to extend the adult education facilities of the University; to introduce experimental procedures in conducting programs of study for mature students; and to provide auxiliary courses not included in formal programs of study, in response to community interest. The college includes the Off-Campus Division, the Campus Division, and the Division of Community Services.

OFF-CAMPUS DIVISION

The Off-Campus Division works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training or off-duty education for employees in departments of the Federal Government, business, and industry; for people working in the fields of education; and for service personnel in nearby military installations. Credit and noncredit courses are organized in any liberal arts field in which there is sufficient demand and for which instructional facilities can be made available. These courses meet at the time and place most convenient for the students enrolled and may begin at any time of the year. In cooperation with Channel 9, WTOP-TV, credit and noncredit television courses and noncredit radio courses are offered.

Credit courses may be applied toward a degree in any college or school of the University provided (1) the student is accepted for degree candidacy in that school or college; (2) the courses meet the curriculum requirements of the school or college; and (3) the number of semester hours earned in the College of General Studies does not exceed the maximum allowed in transfer by the school or college concerned. Credit courses may be transferred to other colleges and universities.

ADMISSION TO COURSE WORK

Admission to an off-campus course does not constitute admission to degree candidacy or permission to attend classes on campus.

A simplified procedure for admission and registration in off-campus courses is con-

ducted at or prior to the first meeting of the class. Transcripts of previous academic work are not required. Registration in credit courses is restricted to those whose qualifications indicate that they are able to complete the course successfully. Degree students enrolled in any other college, school, or division of the University may take credit courses in the College of General Studies *only by permission of the dean* of the college, school, or division concerned. In general, off-campus noncredit courses are open to any individual interested in enrolling. However, when a course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

ADMISSION TO DEGREE CANDIDACY

Application for degree candidacy should be made only if there is a reasonable assurance that the student will be in the area long enough to complete the requirements. Credits granted by this College for the General Educational Development tests and for service schools and correspondence courses may or may not be accepted by another institution or by other schools and colleges of this University.

The following factors are considered in determining the eligibility of an applicant:

1. The adequacy of previous academic work as preparation for the course of study contemplated, including quantity and quality of work and the standing of the institution in which it was done.

2. Results of specified tests, when prescribed by the Committee on Undergraduate Admission and Advanced Standing.

3. The aptitude of the student for the curriculum contemplated.

4. The character of the student.

In agencies and service installations where there is sufficient enrollment to permit offering the necessary range of courses, it is possible, without campus study, to earn the following degrees: Associate in Arts, Associate in Science, Associate in Secretarial Administration, Bachelor of Arts, Bachelor of Science in Cartography, and Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Management.

Special Master's degree programs have been established by the College of General Studies in cooperation with the School of Government, Business, and International Affairs for the students and faculty of the Army War College, Carlisle Barracks, Pennsylvania; the Industrial College of the Armed Forces, Fort McNair, Washington, D. C.; the National War College, Fort McNair, Washington, D. C.; Air University Center, Maxwell Air Force Base, Alabama; and the Naval War College, Newport, Rhode Island. These programs lead to the degrees of Master of Arts in International Affairs, Master of International Affairs, Master of Business Administration, and Master of Public Administration.

CAMPUS DIVISION

The Campus Division is designed for promising adults with unusual backgrounds who merit the individual consideration made possible by this Division's experimental approach to admission, advanced standing, curricula, and evaluation of achievement. The criteria of eligibility for admission are stringent in order to limit registration to

(1) adults well qualified to undertake college work but lacking certain academic requirements for admission to other degree-granting schools and colleges of the University and (2) adults who, through work experience, have gained broad knowledge and high competency in some area of learning. This knowledge may be validated by special examination to gain advanced standing toward a degree.

REQUIREMENTS FOR ADMISSION

The applicant must meet the following requirements:

1. He must be an adult who has achieved outstanding success in his vocation.
2. He must have completed, with the grade of at least *C+*, 12 semester hours in the Off-Campus Division or the Division of University Students. The student who has completed a substantial amount of college work elsewhere with excellent grades may apply for admission to degree candidacy after 6 semester hours at The George Washington University.
3. He must present valid reasons for selecting degree candidacy in the Campus Division of the College of General Studies rather than in another school or college of the University.
4. He must enroll for at least two courses a semester on Campus. Full-time study is encouraged.

DEGREES

The Campus Division offers programs leading to the degrees of Associate in Arts and Bachelor of Arts. In cooperation with Columbian College of Arts and Sciences; the School of Education; and the School of Government, Business, and International Affairs; the Campus Division makes available programs leading to the degree of Bachelor of Arts, with majors in the liberal arts and sciences, and in various subject-matter fields in education and government. Students selecting these majors must satisfy the prerequisite course requirements prior to admission to candidacy or take them as additional work after being admitted.

ARMED FORCES SECTION

The Armed Forces Section of the Campus Division was established for those service personnel who wish to study full time at the University and who have only a limited time under military orders in which to complete their programs of study. Such students register for campus courses through the College of General Studies and remain under its administrative and academic control. By permission of the Dean they may enroll in appropriate courses in the Off-Campus Division.

Military and naval personnel are eligible for admission to this section of the Campus Division if they meet the following requirements:

1. The applicant must be in attendance under official orders which give him a specified time to finish his degree requirements.
2. He must prove that the degree requirements can be completed in the time specified in his orders only by taking advantage of the advanced standing provisions of this College.
3. He must be in a position to enroll for full-time study.

By special arrangements with the Department of the Navy, a naval section of the Armed Forces Section has been established. Such personnel attend the University as full-time students, ordinarily for five semesters.

PROVISIONS FOR SPECIAL PROGRAMS

The Air Force Advanced Management Program sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields through the educational facilities of the School of Government, Business, and International Affairs for a selected group of Air Force officers. Those who qualify by a combination of academic background and the satisfactory completion of this program can be awarded a Bachelor's degree by the College of General Studies. Those with Bachelor's degrees can take these courses for graduate credit to be applied toward the degree of Master of Arts.

Alumni of the Army War College; the Industrial College of the Armed Forces; the National War College; the Air University Center; and the Naval War College who were unable to complete the requirements for the degrees of Master of Arts in International Affairs, Master of International Affairs, Master of Business Administration, and Master of Public Administration while stationed at these military installations may enroll in the Armed Forces Section to complete the requirements for these degrees.

REGULATIONS

Students in the Campus Division of the College of General Studies are subject to and are expected to familiarize themselves with the regulations of the University stated on pages 18–34 and 52–58, as modified in the separate catalogue of the College of General Studies.

DIVISION OF COMMUNITY SERVICES

This Division was organized to provide needed auxiliary educational services and to promote programs designed to supplement the formal educational offerings of the University.

Noncredit courses in a wide variety of subject fields are set up at the request of any interested group. There are no entrance requirements. The length of each course is determined by the wishes of the sponsoring group and the nature of the subject to be studied.

READING CLINIC

The George Washington University Reading Clinic offers both diagnostic and corrective work for small groups or individuals and reading improvement techniques for small classes. All courses are designed to meet particular individual needs whether on a remedial basis or for accelerated reading comprehension. (See page 180.)

FEES

The tuition fees for off-campus credit courses and campus courses are stated in the College of General Studies separate catalogue. The tuition fees for noncredit courses are determined by the length and nature of the course.

Fees for noncredit courses and eight-week credit courses are payable in full at the first meeting of the course. By special arrangement, payments for fifteen-week credit courses may be made in three equal installments.

For complete information concerning the College of General Studies, see the separate catalogue which is available upon request to the College of General Studies, 706 Twentieth Street NW.

THE DIVISION OF UNIVERSITY STUDENTS *

J. G. Allee, Jr., *Dean;* Elizabeth Wright, *Assistant Dean*

THE DEAN'S COUNCIL†

I. B. Hansen, F. E. Johnston, R. D. Kennedy

GENERAL INFORMATION

INTRODUCTORY

The Division of University Students was established in 1930. In this Division are registered students who wish to undertake university courses for credit either here or elsewhere or as auditors, but who are not at this time working toward degrees in this University.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *are stated on pages 18–34; other University regulations, on pages 52–58.*

PROBATION

A student must maintain a quality-point index of at least 2.00, or be placed on probation. He remains on probation as long as his index is below 2.00.

SUSPENSION

A student whose index falls below 1.50 is subject to suspension.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. A student suspended twice for poor scholarship will not be readmitted.

TRANSFER WITHIN THE UNIVERSITY

A "University student" may be transferred, at his request, to another college or school of the University only upon complying with the regulations of the specific college or school to which he wishes to transfer. The student should familiarize himself with the regulations printed in the University CATALOGUE concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on page 54, and regarding graduation requirements on pages 55–56, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

* This listing of Administrative Officers is for 1962–63.

† The Dean of Faculties, the Dean and the Assistant Dean of the Division are members ex officio of the Council.

DIVISION OF AIR SCIENCE

E. M. Wall, *Director*

MILITARY SERVICE DELAY AND AIR FORCE ROTC ADVANCED COURSE SELECTION BOARD*

J. L. Gagnier *(Chairman)*, G. M. Koehl, C. D. Linton, M. A. Mason, L. M. Garrell *(Recorder)*

The Mission of the Air Force ROTC is to develop in selected college students, through a permanent program of instruction at designated civilian educational institutions, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force.

PURPOSE AND OBJECTIVES OF AIR FORCE ROTC

To select and motivate cadets to serve as career Air Force officers in fields as specifically required by the United States Air Force.

To develop in cadets by precept, example, and participation the attributes of character, personality, and attitudes essential for leadership.

To develop in cadets an interest in, and understanding of, the Air Force mission, organization, operations, problems, and techniques.

To provide that military education and training which will give cadets a general background and sound foundation on which to build an officer career.

To select and motivate cadets for career fields as specifically required by the United States Air Force.

COURSE OF STUDY, ELIGIBILITY REQUIREMENTS, BENEFITS

The program is divided into the basic course covering the first two years and the advanced course covering the junior year, summer training unit, and senior year. For a description of Air Science courses, see pages 189–90.

Enrollment in the basic course is open to all men students who are at least 14 years of age, physically fit, of good character, and candidates for Bachelor's degrees. Women students may enroll in the basic Leadership Laboratory course. Enrollment in Leadership Laboratory satisfies the physical education requirement for both men and women.

Enrollment in the advanced course is on a selective basis from among the best qualified cadets who have successfully completed the basic course. Cadets in the advanced course receive subsistence allowances from the Government totaling approximately $500, which is exempt from income tax. During the period of summer training, cadets receive $75 a month, food, lodging, and travel expense. Uniforms, text-

* The President of the University, the Dean of Faculties, and the Director of the Division are members ex officio of this Board.

Selection Board is for the academic year 1962–63.

books, and training materials are provided for all Air Science courses at no expense to the cadet.

Cadet candidates for pilot training are afforded an opportunity to take 35 hours of flying instruction at government expense. Flying instruction is given at an FAA approved school and is creditable toward a private pilot's certificate.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within the authorized quotas.

STUDENT HONORARY MILITARY SOCIETIES

The Arnold Air Society.—A national honorary military society of qualified Air Force ROTC cadets established to further the mission, traditions, and concept of the United States Air Force as a means of national defense, to promote American citizenship, and to create a close and more rewarding relationship among the Air Force ROTC cadets. The national organization founded in 1947, was named in honor of the late General of the Air Force Henry Harley Arnold. The local squadron established in 1952, was named in honor of General Carl Spaatz (retired), the first Chief of Staff of the United States Air Force. All Air Force ROTC cadets who meet the established qualifications are eligible for election to membership. Members are authorized to wear a blue and gold auguilette and ribbon on their cadet uniforms.

Pershing Rifles.—A national honorary military society founded in 1894 by Lieutenant (later General of the Armies) John Joseph Pershing. Its purpose is to encourage, preserve, and develop the highest ideals of the military profession, promote American citizenship, create a closer and more efficient relationship, and provide appropriate recognition of a high degree of cadet achievement. Only basic ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and silver cord and ribbon on their cadet uniforms.

WOMEN'S ACTIVITIES

Flying Sponsors.—A local women's honorary organization established in 1952 to sponsor Air Force ROTC activities.

Angel Flight.—For women who wish to participate with the men in the Leadership Laboratory. Attractive uniforms are supplied free of charge.

REGULATIONS

Cadets and students in the Division of Air Science are subject to and are expected to familiarize themselves with the University regulations stated on pages 18–34 and 52–58; the regulations of the college, school, or division in which enrolled; and the regulations of the United States Air Force pertaining to Air Force ROTC cadets. Individual copies of Cadet Regulations are issued upon enrollment.

THE SUMMER SESSIONS

C. W. Cole, *Dean**

THE DEAN'S COUNCIL*†

C. D. Benson, W. G. Clubb, R. H. Davison, D. C. Kline, C. R. Naeser, B. S. Root

During the summer of 1963, courses are offered from the curricula of the Columbian College of Arts and Sciences; the School of Pharmacy; and the School of Government, Business, and International Affairs during eight weeks of the regular Summer Sessions. Courses from the curricula of the Law School are offered in two six-week terms. The courses from the School of Education are offered as follows: (1) a nine-week session composed of three blocks of three-week daytime courses, and (2) a six-week daytime and evening session.

For a complete statement concerning summer-term work, see the Summer Sessions catalogue.

ADMINISTRATIVE UNITS

HEALTH SERVICES*

University Physicians R. B. Castell *(Director)*, H. L. Pugh; *University Surgeon* B. F. Dean, Jr.; *Associate University Physicians* Alfred Brigulio, Margaret Callan, R. A. Cox *(Eye)*, R. F. Dyer, R. H. Harmon, H. O. House *(Nose and Throat)*; *Associate University Surgeon* J. B. Harrell; *Nurse* Anne Hoffman

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;‡ (2) three visits in any one illness by a

* For the academic year 1962-63.

† The Dean of Faculties and the Dean of the Summer Sessions are members ex officio of the Dean's Council.

‡ A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.* All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

Paul Vernon Bissell, Ph.D., *Director*

The personnel of the Office of the Dean of Men, Building Q, 2029 H Street NW., act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

PUBLIC LAW 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

PUBLIC LAW 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

* See Rule (5) for exception.

PUBLIC LAW 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the veterans adviser from the Office of the Dean of Men during the registration procedure.

PUBLIC LAWS 16 AND 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

COMMUNITY AND UNIVERSITY SERVICES

THE READING CLINIC

Mary Coleman, *Director*

The Reading Clinic, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $35; for individual instruction, $5 a lesson; for semi-individual instruction, $4 a lesson; for instruction in small groups with common reading difficulties, $3.25 a lesson. All fees are payable in advance at the Office of the Cashier.

THE SPEECH CLINIC

C. W. Pettit, *Director*

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, aphasia, foreign accent, voice, and articulatory problems.

Fees.—There is no charge for the diagnosis. The fee for individual instruction is $7 an hour; for group instruction, $4 an hour. Fees are payable at the Office of the Cashier.

THE TESTING AND COUNSELING CENTER

E. L. Phillips, *Director*

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University, and secondarily to high school students and to adults of the community.

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties, provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and tests for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community clients, $65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

STUDENT LIFE

RESIDENCE HALLS

The University maintains eight attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1963–64 are as follows:

	Academic Year	
Residence Halls for Men:	*Double*	*Triple*
John Quincy Adams Hall	.....	$350
John C. Calhoun Hall	$400	350
James C. Welling Hall (Limited space available)	320	.....

Residence Halls for Women:	*Single*	*Double*
William H. Crawford Hall	.....	$450
Devens Hall	$535	405
Hancock Hall	535	405
Dolley Madison Hall	.....	450
Hattie M. Strong Hall	535	450

Forms for applications, together with detailed information, may be obtained from the Dean of Women, Woodhull House, 2033 G Street NW., or the Dean of Men, Building Q, 2029 H Street NW.

Information concerning all off-campus housing near the University may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

HEALTH SERVICES

For details see "Health Services", pages 178–79.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling and conference.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and

graduate students, in which well over 150 private companies, as well as certain government agencies, participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

The University maintains the offices of the Dean of Men and the Dean of Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The deans are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council

The University believes in encouraging the development of a sense of civic responsibility in its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Dean of Men and Dean of Women, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life

The Committee on Student Life has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. This Committee is given authority to approve or disapprove the establishment of any proposed organization on campus.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, Adams Hall Council, Calhoun Hall Council, Crawford Hall Council, Devens Hall Council, Hancock Hall Council, Madison Hall Council, Strong Hall Council, Welling Hall Council, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Rules and Regulations Governing Student Activities."

SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the department of Physical Education in conducting the women's intramural and informal extra-mural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

Other sports activities are included in the Sailing Association and the Rowing Club.

PERFORMING ARTS

Students may participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debating Society; Folk Singers Club; University Players; University Glee Club; and University Orchestra. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Colonial Program.—The Student Council sponsors a variety of programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

Concert Program.—The Student Council sponsors a concert each semester at which well known entertainers perform.

Orchestra Series.—The University Orchestra offers a series of concerts throughout the academic year.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and homecoming show, the homecoming football game, and the homecoming dance.

Religion in Life Program.—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters. It is sponsored by the University Chapel.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree, the singing of Handel's Messiah, and the observance of a special Christmas service at the University Chapel.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Phi Beta Kappa.—A national honor society recognizing "outstanding intellectual capacity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in Columbian College and who have shown broad cultural interests, distinguished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia.

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Aesculapian Society.—An honorary premedical fraternity.

Alpha Kappa Delta.—A national sociology society.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Alpha Omega Alpha.—A national honor medical society.

Alpha Pi Epsilon.—A home economics fraternity.

Arnold Air Society.—A national Air Force ROTC society for advanced cadets.

Delphi.—An intersorority society.

Delta Sigma Rho.—A national forensic society.

Gate and Key.—An intrafraternity society.

Iota Sigma Pi.—A national chemical society for women.

Howard Kane-A.F.A. King Obstetrical Society.—The fifteen students in the third and fourth year classes who maintain the highest grades in their work in obstetrics and gynecology are eligible for membership.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Order of the Coif.—A national legal society, the purpose of which is to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship. Members are elected each year from the highest 10 per cent of the graduating class of the Law School.

Pershing Rifles.—A national Air Force ROTC society for basic cadets.

Phi Epsilon Phi.—A national botany fraternity.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Phi Sigma Tau.—A national philosophy honor society.

Pi Delta Epsilon.—A national collegiate journalism fraternity.

Pi Epsilon Delta.—A national drama honorary fraternity.

Pi Gamma Mu.—A national social-science society.

Psi Chi.—A national psychology fraternity.

Rho Chi Society.—A national pharmaceutical society.

Sigma Alpha Eta.—A national speech and hearing fraternity.

Sigma Pi Sigma.—A national physics fraternity.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Smith-Reed-Russell Society.—A scholastic society in the School of Medicine. Students of the third and fourth years who maintain a quality-point index of 3.30 or higher are eligible for associate membership.

Tassels.—A service honorary society for sophomore women.

Tau Beta Pi.—A national engineering honorary fraternity.

William Beaumont Medical Society.—A society founded with the object of encouraging and stimulating medical students in work of individual investigation.

PROFESSIONAL ORGANIZATIONS

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Alpha Zeta Omega (pharmacy), American Institute of Electrical Engineers—Institute of Radio Engineers (student chapter), American Medical Association (student branch), American Medical Women's Association (student branch), American Pharmaceutical Association (student branch), American Society of Civil Engineers (student chapter), American Society of Mechanical Engineers (student chapter), Association for Hospital Administration, Delta Theta Phi (law), Kappa Beta Pi (law), Kappa Epsilon (pharmacy), Kappa Psi (pharmacy), Student National Education Association, Nu Sigma Nu (medicine), Phi Alpha Delta (law), Phi Chi (medicine),

Phi Delta Delta (law), Phi Delta Epsilon (medicine), Phi Delta Gamma (graduate), Phi Delta Kappa (education), Phi Delta Phi (law), Pi Lambda Theta (education), Society for the Advancement of Management (student chapter), Theta Tau (engineering).

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

DEPARTMENTAL CLUBS

Case Club, El Club Español, Engineers' Council, Enosinian Debating Society, Home Economics Club, Le Cercle Français, Lester F. Ward Sociological Society, Men's Physical Education Club, Pharmacy Council, Phi Sigma Tau (philosophy), Russian Club, Sigma Delta Pi (Spanish), Student Bar Association, Women's Athletic Association.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Association, Christian Science Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Student Christian Fellowship, Unitarian Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

STUDENT PUBLICATIONS

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mechelecu* (engineers' publication), *The Percolator* (pharmaceutical publication), *The Potomac* (literary magazine), *The Speculum* (medical annual), *The Student Handbook*.

OTHER ORGANIZATIONS

Adams Hall Council, Alpha Theta Nu (scholarship winners), Big Sisters, Calhoun Hall Council, Cheerleaders, Chess Club, Colonial Boosters, Crawford Hall Council, Cultural Foundation, Devens Hall Council, Foggy Bottom Sports Car Club, Hancock Hall Council, Interfraternity Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Junior Panhellenic Association, Madison Hall Council, Old Men, Pre-legal Society, Republican Club, Rifle Club, Senior Panhellenic Association, Station WRGW, Strong Hall Council, Student Council, University Pep Band, Wandering Greeks, Welling Hall Council, Young Democrats Club, Young Republican Club.

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1963 and in the academic year 1963–64. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the usual four years, a part-time student may complete the requirements and obtain a degree.

EXPLANATION OF COURSE NUMBERS

In the departments of the School of Medicine, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500. This includes courses open to both medical and nonmedical students. Courses limited to nonmedical students follow the numbering system used in "all other schools and colleges" (see below).

In the National Law Center, first-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses from 401 to 500.

In the School of Engineering and Applied Science courses numbered from 1 through 200 are planned for undergraduate credit; those numbered from 201 and above are planned for graduate credit and may in certain instances be taken by qualified undergraduate students.

In all other schools and colleges the following system of numbering is used:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor and when the completion of additional work has been certified by the instructor.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the instructor to qualified seniors; they are not open to other undergraduates.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

*AIR SCIENCE**

Professor E. M. Wall *(Chairman)*
Assistant Professors J. L. Gagnier, L. M. Garrell
Instructors Anthony Nassner, C. C. Smarr, C. R. Young

Commission in the United States Air Force Reserve.—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Air Force ROTC course of instruction prescribed by law and regulations, the graduate will be appointed Second Lieutenant, United States Air Force Reserve.

BASIC COURSE

1–2 *Leadership Laboratory—Freshman Year* (1–1) The Staff

Cadet basic airman training. Military courtesy, discipline, appearance and bearing; element, flight squadron, and mass formation drill; parades and ceremonies; the military mission and the problem of national security. Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3. (May be substituted for Physical Education 1–2.) (Academic year—day.)

11–12 *Leadership Laboratory—Sophomore Year* (1–1) The Staff

Cadet noncommissioned officer training. Military bearing and courtesy, all phases of drills and ceremonies, command voice training and command responsibility. Prerequisite: Air Science 1–2, 21–22 for men and Air Science 1–2 for women. Political Science 1 or 9 is recommended as an elective during the sophomore year. Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3. (May be substituted for Physical Education 11–12.) (Academic year—day.)

21 *Air Science—Freshman Year* (2 or 3)

Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical and natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science as meeting the pre-commission officer educational requirements. (Fall.)

22 *Foundations of Aerospace Power—Freshman Year* (2) Garrell

An introductory examination of the factors of aerospace power, major ideological conflicts, requirements for military forces in being, responsibilities of citizenship, development and traditions of the military profession, role and attributes of the professional officer in American democracy, organization of the armed forces as factors in the preservation of national security, and the United States Air Force as a major factor in the security of the free world. (Spring: 2 hours a week—day.)

51 *Fundamentals of Aerospace Weapon Systems—Sophomore Year* (2) Garrell

An introductory survey of aerospace missiles and craft, and their propulsion and guidance systems; target intelligence and electronic warfare; nuclear, chemical, and bio-

* The Staff of Instruction is for the academic year 1962–63.

logical warhead agents; defensive, strategic, and tactical operations; problems, mechanics, and military implications of space operations; and a survey of contemporary military thought. (Fall: 2 hours a week—day.)

52 *Air Science—Sophomore Year* (2 or 3)
Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical or natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science as meeting the pre-commission officer educational requirements. Political Science 1 or 9 is recommended as an elective during the sophomore year. (Spring.)

ADVANCED COURSE

101–2 *Air Science—Junior Year* (1–1)
Air Force officer development. Knowledge and skills required of a junior officer in the Air Force. This includes the Air Force commander, his staff, and the air base; the military justice system; and preparation for summer training. Prerequisite or concurrent registration: one 3 semester hour college course, each semester, approved by the Division of Air Science. (Academic year—day.)

103–4 *Leadership Laboratory—Junior Year* The Staff
(Credit is a part of Air Science 101–2)
Cadet noncommissioned officer and officer training. Wearing of the uniform, parades and ceremonies, commands and command voice. Cadets perform duties involving planning for and supervision of Cadet Corps activities. Emphasis placed on leadership and management proficiency. Minimum 15 hours a semester. (Academic year—day.)

105 *Summer Training Unit—Between Junior and Senior Years* (required) The Staff
Attendance at a four-week Air Force ROTC summer training unit at an Air Force base within continental United States is mandatory. Program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training.

151–52 *Air Science—Senior Year* (1–1)
First half: weather and navigation. A study of the weather and navigational aspects of airmanship, such as temperature, pressure, air masses, precipitation, weather charts, and dead reckoning navigation. *Second half:* the Air Force officer. A study of materials to help the cadet make a rapid effective adjustment to active duty as an officer of the United States Air Force. Prerequisite or concurrent registration: one 3 semester hour college course, each semester, approved by the Division of Air Science. Only pilot candidates need take weather and navigation. Others may substitute any college course approved by the Division of Air Science. (Academic year—day.)

153–54 *Leadership Laboratory—Senior Year* The Staff
(Credit is a part of Air Science 151–52)
Cadet officer training. Cadet officers conduct activities of Corps of Cadets through chain of command, instruct subordinates, plan and supervise Cadet Corps training and administration. Preparation for commissioned officer duties. Development of leadership and managerial responsibilities. Minimum 15 hours per semester. (Academic year—day.)

ANATOMY *

Professors I. R. Telford *(Chairman)*, Paul Calabrisi
Professorial Lecturer T. D. Stewart
Associate Professors F. D. Allan, T. N. Johnson
Associate Professorial Lecturers L. C. Dearden, B. S. Blumberg
Assistant Professors J. B. Christensen, J. C. Bartone
Lecturer L. E. Church
Clinical Instructors R. N. Brown, L. E. Church, L. C. Dearden, B. S. Blumberg

Master of Science in the field of Anatomy.—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in Biology, Chemistry, or Zoology. The undergraduate program must include the following courses, or the equivalent: Biology 1–2†, Chemistry 11–12, 21, 151–52; Physics 11, 12; Zoology 103–4 (formerly 41–42). Biochemistry 221–22 is recommended as an elective.

Required: the general requirements, pages 79–81, including Anatomy 203, 204, 205, 221–22, 295–96, 299–300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See pages 83–90.

101 *Gross Anatomy* — Calabrisi and Staff

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. (Fall—12 hours a week.)

103 *Human Embryology* — Allan and Staff

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology. (Fall—3 hours a week.)

104 *Neuroanatomy* — Johnson and Staff

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. (Fall—3 hours a week.)

105 *Microscopic Anatomy* — Telford and Staff

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations. (Fall—6 hours a week.)

201 *Gross Anatomy* (8) — Calabrisi and Staff

For qualified nonmedical graduate students. Same as Anatomy 101. Laboratory fee, $30. (Fall—as arranged.)

203 *Human Embryology* (2) — Allan and Staff

For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8. (Fall—as arranged.)

204 *Neuroanatomy* (2) — Johnson and Staff

For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13. (Fall—as arranged.)

205 *Microscopic Anatomy* (4) — Telford and Staff

For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13. (Fall—as arranged.)

* The Staff of Instruction is for the academic year 1962–63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

221–22 *Seminar* (1–1) — Telford and Staff
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)

249–50 *Introduction to Medical Research (3–3)** — The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academc year—W 1-5 pm.)

295–96 *Research* (arr.) — The Staff
Fee to be arranged. (Academic year—as arranged.)

299–300 *Thesis* (3–3) — The Staff

ANESTHESIOLOGY †

Professors C. S. Coakley *(Chairman)*, Seymour Alpert
Clinical Professor D. H. Stubbs
Associate Professor C. R. MacCordy
Assistant Professors Paula Kaiser, H. E. Curtis, Helene Werner, K. H. Hanson
Assistant Clinical Professors S. N. Albert, Maria Benzinger
Instructors Patricia Russell, Virginia Porter, Marie-Louise Levy
Clinical Instructors W. E. Bageant, Allen Widome, Charles Gruenwald, E. J. Dealy

320 *Anesthesiology* — The Staff
The fundamentals of anesthesia are reviewed and correlated with other medical specialties. (Spring—1 hour a week.)

421–22 *Anesthesia Seminar* — The Staff
Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital. (Academic year—1 hour a week.)

433–34 *Advanced Anesthesiology* — The Staff
Students are rotated through the work of the department for a period of two weeks and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered. (Academic year—as arranged.)

* This is an interdepartmental course. The student should register in the department directing his research.
† The Staff of Instruction is for the academic year 1962-63.

ART *

Professors D. C. Kline *(Chairman)*, W. A. MacDonald
Professorial Lecturer Grace Evans
Associate Professor L. P. Leite†
Associate Professorial Lecturer E. E. Harrison
Assistant Professor George Steiner
Studio Lecturers on the Staff of the Corcoran School of Art Edmund Archer, Richard Lahey, Jessalee Sickman, Heinz Warneke, Jack Perlmutter, Alexander Russo, Eleanor Bookout, Joseph Carter, Richard Lafean, John Ruddley, Joseph Taney, Peter Thomas
Studio Lecturers in Applied Music R. H. Harmon, John Martin, Joseph Ott, Norman Scribner, John Stephens, Margaret Tolson, Richard Townsend, Jule Zabawa

Bachelor of Arts with a major in (1) *Art History and Theory*, (2) *Drawing and Painting*, (3) *Sculpture*, (4) *Commercial Art*, *or* (5) *Ceramics (Departmental)*:

The major in Art History and Theory.—Prerequisite: the Arts and Letters curriculum, page 67, or the equivalent, including Art 31–32 and 71–72.

Required: in addition to the general requirements, pages 73–77, eighteen semester hours, as follows: Art 101 or 102, 103, 104 or 105, 110, 112, 113 or 114; and twelve semester hours selected from second group courses, or from third-group courses open to undergraduates with the approval of the instructor. Students intending to major in this field are urged to acquire a reading knowledge of a foreign language, preferably French or German, at the earliest possible convenience.

The major in Drawing and Painting, Sculpture, or *Commercial Art.*—Prerequisite: the Arts and Letters curriculum, page 67, or the equivalent, including Art 21–22, 41–42, and 31–32 or 71–72.

Required: in addition to the general requirements, pages 73–77, twenty-four semester hours of studio practice; six semester hours of art history selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor.

The major in Ceramics.—Prerequisite: the Arts and Letters curriculum, page 67, or the equivalent, including Art 21–22, Art 31–32 or Art 71–72, and Art 51–52.

Required: in addition to the general requirements, pages 73–77, twenty-four semester hours of studio practice; six hours of art history selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor.

Classes in the practice of art are held at the Corcoran School of Art.

Bachelor of Arts with a major in (1) *Music History and Literature*, (2) *Music Theory* or (3) *Applied Music (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 67, or the equivalent, including Music 5–6.

Required: in addition to the general requirements, pages 73–77, Music 103–4 and 131–32; a minimum of four semesters in Music Ensemble groups (or evidence of equivalent experience); and twenty-four semester hours of second-group courses as follows:

1. *For the major in Music History and Literature.*—Fifteen semester hours of Music History and Literature courses, six hours of Applied Music, and Music 135 or 137.
2. *For the major in Music Theory.*—Twelve semester hours of Music Theory courses, six hours of Music History and Literature courses, and six hours of piano (other instrument or voice if departmental requirements for proficiency in piano are met).
3. *For the major in Applied Music.*—Twelve semester hours of Applied Music in field of specialization and participation in senior recital, six hours of Music Theory courses, and six hours of Music History and Literature courses.

Master of Arts in the field of Art History and Criticism with concentrations in Classical Art and Archeology, Art of the Americas, Renaissance and Baroque Art, and Contempo-

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave fall semester 1962–63.

rary Art.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or the equivalent.

Required: the general requirements, pages 78–81. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A general written examination on the problems in the field of Art History and Criticism; a written thesis embodying the results of research on some specific topic in the history and criticism of art.

Master of Fine Arts in the field of Painting or *of Sculpture.*—Prerequisite: the degree of Bachelor of Arts with a major in Drawing and Painting, Sculpture, or Commercial Art at this University, or the equivalent.

Required: the general requirements, pages 79–81. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A creative thesis in painting or sculpture; a paper discussing some technical phase of the problem illustrated by the thesis.

Bachelor of Arts in Education with a teaching field in Art (School of Education).—Prerequisite: the Education curriculum, page 69.

Required: the Art option and professional courses listed in the School of Education Catalogue.

ART HISTORY AND THEORY

FIRST GROUP

1 *Art Appreciation* (3) MacDonald

The language and function of art in its various media; the historical development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day; summer 1963.)

31–32 *Survey of Western Art* (3–3) Leite

A survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—evening.)

71–72 *Introduction to the Arts in America* (3–3) Kline

Painting, sculpture, and architecture of America, with selected references to the crafts and popular arts. *First half:* from Colonial beginnings to the Republican Age. *Second half:* from early 19th century to the present. (Academic year—day; summer 1963.)

SECOND GROUP

101 *Greek and Roman Architecture* (3) MacDonald

(Fall—evening.)

102 *Greek and Roman Sculpture* (3) MacDonald

(Spring—evening.)

103 *Medieval Art* (3) Evans

Architecture, sculpture, and painting from the formative states of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. (Spring—evening; summer 1963.)

104 *Renaissance Art in Italy I* (3) Leite

The early developments from the 13th to the 15th century. (Fall—day.)

105 *Renaissance Art in Italy II* (3) Leite

The High Renaissance and Mannerism. (Spring—day.)

106 *Renaissance Art in the North* (3) Leite (Fall—

The painting in the Netherlands, Germany, France, Spain, and Portugal. day.)

107 *Eighteenth Century Art in Europe* (3) — Evans
The development of painting, sculpture, and architecture in 18th century Europe. (Not offered 1963–64.)

109 *Nineteenth Century Art in Europe* (3) — Leite
Painting and sculpture from Academism to Symbolism. (Fall—day.)

110 *Contemporary Art* (3) — Leite
Painting and sculpture in 20th century Europe. (Spring—day.)

111 *Classical Archeology* (3) — MacDonald
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day.)

112 *Art of Egypt and the Ancient Orient* (3) — MacDonald
A study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Spring—day.)

113 *Baroque Art in Italy* (3) — Evans
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy. (Fall—day.)

114 *Baroque Art in the North* (3) — Evans
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Spring—day.)

115 *Christian Iconography* (3) — Leite
The origins and development of Christian symbols and themes from Early Christian to modern times. (Not offered 1963–64.)

116 *Classical Iconography* (3) — MacDonald
The origin and development of myths in classical art. (Not offered 1963–64.)

120 *Art of China and Japan* (3) — Kline
The architecture, painting, and sculpture of China, Korea, and Japan. (Spring—day.)

141 *Interior Decoration* (3) — Kline
The principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. (Not offered 1963–64.)

142 *House Planning* (3) — Kline
The contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1963–64.)

143 *Folk Arts in America* (3) — Kline
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected references to American folk music. (Summer 1963.)

THIRD GROUP

203 *Primitive Art** (3) — Kline
The arts of prehistoric and primitive man in Europe in the pre-Columbian Americas, Oceania, and Africa. (Fall—day.)

207 *Modern Architecture* (3) — Kline
The development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Not offered 1963–64.)

243 *Seminar in American Art* (3) — Kline
(Fall—day.)

244 *Seminar in Naturalism and Realism* (3) — Leite
A reading knowledge of French is desirable. (Not offered 1963–64.)

* May be taken for undergraduate credit with the approval of the instructor.

245 *Seminar in Romanticism* (3) Leite
A reading knowledge of French and German is desirable. (Not offered 1963–64.)

246 *Seminar in Classical Art* (3) MacDonald
(Fall—day.)

247 *Seminar in Symbolism* (3) Leite
(Not offered 1963–64.)

248 *Studies in Classical Art* (3) MacDonald
(Summer 1963.)

261–62 *Theory and Criticism* (3–3) MacDonald
The history of theory and criticism in Classical, Medieval, Renaissance, and Modern times. (*First half:* fall—day. *Second half:* not offered 1963–64.)

289–90 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

DRAWING AND PAINTING, SCULPTURE, COMMERCIAL ART, AND CERAMICS

FIRST GROUP

21–22 *Basic Design and Composition** (3–3) Ruddley
The fundamentals of two- and three-dimensional design. (Academic year—day and evening; summer 1963—Art 21 (3).)

35–36 *Commercial Art I* (3–3) Taney
Fundamentals of advertising and editorial layout. (Academic year—day and evening.)

41–42 *Drawing and Perspective* (3–3) Russo
An introductory course in object and figure drawing and mechanical perspective. (Academic year—day and evening; summer 1963—Art 41 (3).)

51–52 *Ceramics I* (3–3) Lafean and Staff
Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Material fee, $25 a semester. (Academic year—day and evening; summer 1963—Art 51 (3), Art 52 (3).)

65–66 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) The Staff
Primarily for nonmajors. (Academic year—day; summer 1963—Art 65 (3).)

81–82 *Sculpture I* (3–3) Warneke, Turano
Material fee, $6 a semester. (Academic year—day and evening.)

SECOND GROUP

125–26 *Drawing and Painting II—Life, Still Life, and Portrait*‡ (6–6) The Staff
(Academic year—day.)

127–28 *Drawing and Painting III—Life and Portrait*‡ (6–6) The Staff
(Academic year—day and evening; summer 1963—Art 127 (3)†.)

131–32 *Ceramics II* (6–6) Lafean
Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming, mosaic. Practical experience in display. Individual projects in a choice of

* Art 21–22 is prerequisite to all other studio courses.
† May be taken for 6 semester hours with the approval of the instructor.
‡ May be repeated for credit with the approval of the Department.

techniques, and experimentation in the possibilities and limitations of the medium. Oxidation firing, ceramic design, current directions of the studio potter, research in studio procedures and equipments. Material fee, $30 a semester. (Academic year—day and evening; summer 1963—Art 131 (3)*, Art 132 (3)*.)

151–52 *Ceramics III* (6–6) Lafean

Advanced glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Studio teaching techniques and marketing procedures. Material fee, $30 a semester. (Academic year—day and evening.)

157–58 *Graphics* (6–6) Perlmutter

Relief printing and wood block, with special reference to western and eastern techniques. (Academic year—day.)

159–60 *Anatomy and Techniques* (6–6) Russo

Special problems in anatomy and drawing and painting of the life model in action. (Academic year—day.)

161–62 *Workshop in Ceramics* (3–3) Lafean and Staff

Proper use of ceramic equipment, study of ceramic materials, class projects for varying age groups. Material fee, $35. (Summer 1963.)

175–76 *Advanced Design and Composition* (6–6) Ruddley

Advanced problems in creative design and composition. (Academic year—day and evening; summer 1963—Art 175 (3)*.)

179–80 *Sculpture II*† (6–6) Warneke, Turano

Portrait-life modeling and composition in clay; plaster and wood carving. Material fee, $6 a semester. (Academic year—day and evening.)

183–84 *Commercial Art II* (6–6) Taney and Staff

Problems in the production of advertisements, posters, magazines, pamphlets, displays, exhibits, photography, and materials for television. (Academic year—day and evening.)

185–86 *Commercial Art III* (6–6) Taney and Staff

Advanced problems and techniques in supervision and production of various commercial projects. (Academic year—day and evening.)

189–90 *Sculpture III*† (6–6) Warneke

Advanced problems in modeling and direct carving. Prerequisite: 18 semester hours of sculpture. Material fee, $6 a semester. (Academic year—day and evening.)

THIRD GROUP

265–66 *Painting IV*† (6–6) The Staff

(Academic year—day and evening; summer 1963—Art 265 (3)*.)

275 *Painting V*† (6) The Staff

(Fall and spring—as arranged; summer 1963—Art 275 (3)*.)

279–80 *Sculpture IV*† (6–6) Warneke, Turano

(Academic year—as arranged.)

281 *Sculpture V*† (6) Warneke

Material fee, $6. (Fall and spring—as arranged.)

299–300 *Thesis* (3–3) The Staff

(Academic year—as arranged; summer 1963.)

* May be taken for 6 semester hours with the approval of the instructor.
† May be repeated for credit with the approval of the Department.

MUSIC HISTORY AND LITERATURE AND MUSIC THEORY

FIRST GROUP

3–4 *Music Appreciation* (3–3) Steiner, Harrison
An introduction to the historical sequences of musical style, the elements of music, musical forms, the works of the chief composers, and the media of musical presentation. (Academic year—day and evening; summer 1963—Music 4 (3).)

5–6 *Fundamentals of Music* (3–3) Harrison
Fundamental principles and practical use of the elements of music, including scales, keys, intervals, triads, chords, cadences, notation, terms, melodic and harmonic dictation and basic harmonic and contrapuntal practice. (Academic year—day.)

SECOND GROUP

103–4 *History of Music* (3–3) Steiner
The development of music in the Western World from the early Christian Era to the present. (Academic year—day; summer 1963—Music 104 (3).)

106 *Music of the Classic Period* (3) Harrison
Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Fall—day.)

107 *Music of the Romantic Period* (3) Harrison
Study of the styles, backgrounds, and literature from Schubert through the 19th century developments of nationalism, descriptivism, and neo-classicism. (Spring—day.)

109 *Orchestra Literature* (3) Steiner
Survey of the history and styles of orchestra literature; analysis of representative works (Fall—day.)

110 *Chamber Music Literature* (3) Steiner
Survey of the history and styles of chamber music literature; analysis of representative works. (Spring—day.)

121 *The Opera* (3) Harrison (Fall—
Survey of the history and styles of opera; analysis of representative works. day.)

131–32 *Harmony* (3–3) The Staff
Practice in harmonic writing, figured and unfigured bass, secondary and altered chords, nonharmonic tones and extended modulations. Prerequisite: Music 5–6 or the equivalent. (Academic year—evening.)

135 *Counterpoint* (3) The Staff
Strict counterpoint up to four parts. Techniques of small contrapuntal forms. (Spring—evening.)

137 *Orchestration* (3) The Staff
Instrumental orchestral scoring. (Fall—evening.)

138 *Form and Analysis* (3) Harrison
Analysis of musical forms in representative musical literature. (Spring—day.)

APPLIED MUSIC

FIRST GROUP

All first-group courses in Applied Music may be repeated for credit.

11 *Piano* (1 or 2) Tolson, Ott
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 11 (1).)

13 *Voice* (1 or 2) Zabawa
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 13 (1).)

15 *Organ* (1 or 2) Scribner
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 15 (1).)

17 *Orchestral Instruments* (1 or 2) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 17 (1).)

51 *Orchestra* (1) Steiner
Preparation and performance of orchestral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

53 *Chorus* (1) Harmon
Preparation and performance of choral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

SECOND GROUP

Before admission to second-group courses in Applied Music the student must demonstrate, in audition, that he meets departmental requirements.

All of the following courses may be repeated for credit: *only music majors*, however, may earn 3 hours of credit in one semester for any of these courses. The studio fee is waived for full-time major students.

111 *Piano* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

113 *Voice* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

115 *Organ* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

117 *Orchestral Instrument* (1or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

BIOCHEMISTRY *

Professors J. H. Roe *(Emeritus)*, C. R. Treadwell *(Chairman)*
Professorial Lecturers W. R. Carroll, Irving Gray, Arthur Weissbach, Leon Swell, Sidney Udenfriend, C. A. Kuether
Associate Professors B. W. Smith, G. V. Vahouny, J. M. Bailey

Master of Arts or *Master of Science in the field of Biochemistry.*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Biology 1-2†; Chemistry 11-12, 21, 22, 151-52; Physics 11 and 12.

* The Staff of Instruction is for the academic year 1962-63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

Required: the general requirements, pages 78–81, including Biochemistry 221–22, 227–28, 249–50, 299–300. The remaining courses are to be selected from Biochemistry 224, 232, 241, 251, 261, 295–96, or, with the approval of the adviser, from graduate courses in Microbiology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See pages 83–90.

113–14 *Medical Biochemistry* — The Staff
Lecture (2 hours), conference (1 hour), laboratory (6 hours). Physiological and clinical chemistry. For medical students. (Academic year—as arranged.)

221–22 *General Biochemistry* (4–4) — Vahouny
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, $15 a semester. (Academic year—TTh 8–12 am.)

224 *Biochemistry of the Enzymes* (1) — Weissbach
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. (1964–65 and alternate years: spring—M 5 pm.)

225–26 *Biochemical Procedures* (3–3) — Smith and Staff
A laboratory course. Material fee, $16 a semester. (Academic year—as arranged.)

227–28 *Biochemistry Seminar* (1–1) — The Staff
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (*First half:* F 5 pm. *Second half:* F 4 pm.)

232 *Proteins and Amino Acids* (1) — Carroll
A lecture course. Prerequisite: Biochemistry 113 or 221. (Spring—W 5 pm).

241 *Isotopes* (2) — Gray
Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromotography. (Spring—S 8 am.)

249–50 *Introduction to Medical Research** (3–3) — Bailey
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

251 *Carbohydrate Metabolism* (1) — Weissbach
A lecture course. Prerequisite: Biochemistry 114 or 222. (1963–64 and alternate years: spring—M 5 pm.)

261 *Biochemistry of the Lipids* (1) — Swell, Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. (Spring—S 12 noon.)

295–96 *Research in Biochemistry* (arr.) — The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) — The Staff

* This is an interdepartmental course. The student should register in the department directing his research.

BOTANY *

Professor R. B. Stevens *(Chairman)*
Professorial Lecturer L. B. Smith
Associate Professors J. M. Kaper *(Research)*, Caroline Adams
Associate Professorial Lecturers Kittie Parker, R. S. Sigafoos, Edward Hacskaylo, H. M. Cathey, R. N. Stewart, R. L. Weintraub
Lecturer W. A. Shropshire, Jr.

Bachelor of Arts or *Bachelor of Science with a major in Botany (Departmental)*.—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68, including Biology 1–2†, or the equivalent.

Required: in addition to the general requirements, pages 73–77, a minimum of twenty-four semester hours of second-group courses in Botany or in a combination of Botany and related sciences as approved by the Chairman.

Bachelor of Arts or *Bachelor of Science with a major in Biology (Departmental)*.—This interdepartmental major may be arranged in conjunction with the Department of Zoology. Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68, including Biology 1–2, or the equivalent.

Required: in addition to the general requirements, pages 73–77, a minimum of twenty-four semester hours of second-group courses which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Master of Arts or *Master of Science in the field of Botany*.—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany or Biology.

Required: the general requirements, pages 78–81.

Master of Arts or *Master of Science in the field of Biology*.—This interdepartmental field may be arranged in conjunction with the Department of Zoology. Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany, Zoology, or Biology.

Required: the general requirements, pages 78–81, which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Doctor of Philosophy (in a field of Botany or Biology).—See pages 83–90.

Bachelor of Arts in Education with a teaching field in Biology.—Prerequisite: the Education curriculum, page 69.

Required: the Biology option and the professional courses listed in the School of Education Catalogue.

BIOLOGY†

FIRST GROUP

1-2 *Introductory Biology*‡ (4–4) **The Staff**

An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology.

* The Staff of Instruction is for the academic year 1962–63.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

‡ Biology 1–2 is prerequisite to all second-group courses in Botany, except by permission of the instructor.

It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences (4)*: fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences (4)*: fall and spring—day and evening; summer 1963.)

BOTANY

SECOND GROUP*

105 *Field Botany* (3) — Parker
Lecture (1 hour), laboratory and field (4 hours). A course, primarily for nonspecialists, emphasizing local flora. (1963 and alternate summers.)

106 *Plant Growth* (3) — Shropshire
Lecture (2 hours), laboratory (2 hours). A course, primarily for nonspecialists, emphasizing practical problems of growing and caring for plants. Material fee, $8. (1964 and alternate summers.)

108 *Organic Evolution*† (3) — Munson
Theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: spring—day; 1964–65: spring—evening.)

109–10 *Plant Morphology* (3–3) — Adams
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—day.)

115–16 *Cytology*† (3–3) — Desmond
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

125–26 *Plant Taxonomy* (3–3) — Parker
Lecture (1 hour), laboratory and field (4 hours). (1963–64 and alternate years: academic year—evening.)

127 *Genetics*† (3) — Stewart
A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

131–32 *Mycology* (3–3) — Stevens, Haeskaylo
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1964–65 and alternate years.)

133–34 *Plant Pathology* (3–3) — Stevens
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—evening.)

135–36 *Plant Physiology* (3–3) — Cathey
Lecture (2 hours), laboratory (2 hours). Prerequisite: Chemistry 11–12 or permission of the instructor. Material fee, $8 a semester. (1964–65 and alternate years.)

140 *Cell Physiology*† (3) — Shropshire
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

141–42 *Plant Ecology* (3–3) — Sigafoos
Lecture (1 hour), laboratory and field (4 hours). (1964–65 and alternate years.)

* Biology 1–2 is prerequisite to all second-group courses in Botany except by permission of the instructor.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

THIRD GROUP

201–2 *Seminar: Cytology** (3–3) — Desmond
A study in the current literature in experimental cytology. (Not offered 1963–64.)

221 *Seminar: Taxonomy* (3) — Smith
(1964–65 and alternate years.)

232 *Seminar: Mycology and Plant Pathology* (3) — Stevens
(1963–64 and alternate years: spring—as arranged.)

235 *Seminar: Plant Physiology* (3) — Cathey, Hacskaylo
(1963–64 and alternate years: fall—as arranged.)

242 *Seminar: Plant Ecology* (3) — Sigafoos
(1964–65 and alternate years.)

252 *Seminar: Plant Virology* (2) — Kaper
(Spring—as arranged.)

295–96 *Research* (arr.) — The Staff
Fee to be arranged. (Academic year—as arranged; summer 1963—Botany 295 (arr.).)

299–300 *Thesis* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

CHEMISTRY†

Professors B. D. Van Evera, S. N. Wrenn, C. R. Naeser *(Chairman)*, R. C. Vincent, W. F. Sager, R. E. Wood, T. P. Perros, W. E. Schmidt, D. G. White
Associate Professor J. W. Harkness
Assistant Professors R. C. Sentz, Margaret Ethier, D. M. Eargle

Registration.—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

Bachelor of Arts or *Bachelor of Science with a major in Chemistry (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68, including Chemistry 11–12, 21, and 22, Mathematics 22 and 23 (or former 29 and 30), Physics 11, 12, 13, 16; or 11, 14, 15, and 16.

Required: the general requirements, pages 73–77, including Chemistry 111–12, 113–14, 122, 134 (or 235–36), 151–52, 135 or 155 (two semester hours), and 193 and a grade of "pass" on the chemistry major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) analytical chemistry, (2) inorganic chemistry, (3) organic chemistry, (4) physical chemistry. The work of the junior and senior years must be approved by the Department. Chemistry 153 and the German language are required of all majors who wish to be certified to the American Chemical Society. Others may omit Chemistry 153 and may elect French or Russian. Two foreign languages are recommended for students planning to do graduate work.

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

† The Staff of Instruction is for the academic year 1962–63.

Master of Arts or *Master of Science in the field of Chemistry.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements, pages 78–81. All prospective Master's candidates must take qualifying examinations in the fields of analytical, inorganic, organic, and physical chemistry. These examinations will be given during the first week of classes each semester, and are a part of the prerequsites for all advanced courses. At least two of these examinations must be taken at the beginning of the first year of registration and the remaining one(s) must be taken at the beginning of the second year. Deficiencies, if any, shall be eliminated by assignment to appropriate courses in the 100 group for which a limited amount of graduate credit may, upon petition, be assigned for courses normally taken by seniors. The thirty hours of required work must include Chemistry 213 and at least one three semester hour course in the 200 group in two of the three fields of analytical, inorganic, and organic chemistry. In addition, the thirty hours must include at least four semester hours of laboratory work, Chemistry 193 and 299–300. Chemistry 156 is prerequisite to thesis work in the field of organic chemistry. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in Chemistry.—Prerequisite: the Education curriculum, page 69.

Required: the Chemistry option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

3–4 *Fundamentals of Physical Sciences* (4–4) Schmidt, Ethier

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester. (Academic year—day.)

11–12 *General Chemistry* (4–4) The Staff

A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

13–14 *General Chemistry* (4–4) White

A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 11 and Mathematics 21 or 29. Laboratory fee, $18 a semester. (Academic year—day and evening.)

15 *General Chemistry (Accelerated)* (4) The Staff

Lecture (3 hours), laboratory (3 hours), recitation (1 hour). An intensive one semester course in general chemistry. Prerequisite: high school chemistry accompanied by laboratory work and a satisfactory grade on either the College Entrance Examination Board Achievement Test in Chemistry or on the placement examination given by the Department of Chemistry prior to registration, and high school physics. Laboratory fee, $13. (Fall—day.)

21 *Qualitative Inorganic Analysis* (4) Vincent

Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12 or 15, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, $18. (Fall—day and evening; spring—day; summer 1963.)

22 *Quantitative Inorganic Analysis I* (4) Schmidt
Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18. (Spring—day and evening; summer 1963.)

SECOND GROUP

111–12 *Physical Chemistry Lectures* (3–3) Wood
A year course: credit is not given for the first half until the second half is completed. Introduction to physical chemistry. Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have adequate credit for physical chemistry laboratory. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 22 or former 30, Physics 13 or 15, or (2) Chemistry 21, Mathematics 22 or former 30, Physics 14. (Academic year—day and evening.)

113–14 *Physical Chemistry Laboratory* (2–2) Wood
A year course: credit is not given for the first half until the second half is completed. Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester. (Academic year—day (also Saturday).)

122 *Quantitative Inorganic Analysis II* (4) Schmidt
Lecture (2 hours), laboratory (6 hours). Continuation of Chemistry 22 including theory and practice of separations, organic reagents, electrochemistry, and colorimetry in analysis. Prerequisite: Chemistry 22. Laboratory fee, $18. (Fall—day and evening.)

134 *Descriptive Inorganic Chemistry* (2) White
An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151. (Spring—day.)

135–36 *Inorganic Chemistry: Preparations* (2–2) Perros
Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152 and 134. Laboratory fee, $18 a semester. (*First half:* Fall—day, spring—evening. *Second half:* spring—evening.)

151–52 *Organic Chemistry* (4–4) Wrenn, Sager
A year course: credit is not given for the first half until the second half is completed. Chemistry of the compounds of carbon. Prerequisite*: Chemistry 21. Laboratory fee: Chemistry 151, $12; Chemistry 152, $20. (*First half:* fall—lecture (3 hours), laboratory (3 hours), day and evening; summer 1963. *Second half:* spring—lecture (2 hours), laboratory (6 hours), day and evening; summer 1963.)

153 *Special Laboratory in Organic Chemistry* (1) Wrenn, Sager
A course designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 151–52. Prerequisite or concurrent registration: Chemistry 22 and 152. Laboratory fee, $12. (Spring—day and evening.)

155 *Organic Chemistry: Preparations* (2 or 3) Wrenn
Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour. (Spring—evening.)

156 *Qualitative Organic Analysis* (3) Sentz
Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students

* This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 or 15 within the past two years or by a placement examination.

planning thesis work in Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, $18. (Fall—evening.)

191 *History of Chemistry* (2) Perros
Historical development of chemistry. Prerequisite: Chemistry 22 and 152. (1963–64 and alternate years: fall—evening.)

193 *Chemical Literature* (1) Wrenn
A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Fall—evening.)

THIRD GROUP*

203 *Chemical Kinetics* (2) Wood
The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. (1963–64 and alternate years: spring—evening.)

211–12 *Physical Chemistry* (2–1) Wood
Same course as 111–12. Chemistry 211–12 may be taken for credit only by special permission. Credit will be assigned only upon the satisfactory completion of Chemistry 213. (Academic year—day and evening.)

213 *Chemical Thermodynamics* (3) Wood
Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: grade of *A* or *B* in Chemistry 111–12, *Satisfactory* in 211–12, or qualifying grade in physical chemistry qualifying examination. (Fall—evening.)

216 *Statistical Mechanics as Applied to Chemistry* (3) Sager
An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

217 *Chemical Bonding* (2) Sager
A survey of modern developments in the theory of valence with emphasis on application to problems of stability and structure of complex molecules. Prerequisite: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

221–22 *Advanced Analytical Chemistry* (2 or 3–2 or 3) Schmidt
Lecture (2 hours), laboratory (3 hours—optional). Theory and application of recent methods of analysis including electrical and optical instrumentation. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a semester without laboratory work, either half may be taken first. Laboratory fee, $11 a semester. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

231–32 *Special Topics in Inorganic Chemistry* (2–2) White, Perros
A series of one-semester courses covering such topics as (1) chemistry of the less familiar elements, (2) organometallic, organosilicon, and carbonyl compounds, and (3) co-ordination chemistry. Prerequisite: Chemistry 235. (Academic year—evening.)

234 *Radiochemistry* (2)
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235–36. (1964–65 and alternate years.)

235–36 *Inorganic Chemistry* (3–2) Nasser
Application of modern chemical theories to inorganic substances and reactions, followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Academic year—evening.)

* The appropriate qualifying examination is prerequisite to all advanced courses.

251–52 *Advanced Organic Chemistry* (3–3) Sager
Synthesis, reactions, and properties of carbon compounds, fundamental theories of organic chemistry. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12, 113–14. (Academic year—evening.)

253 *Advanced Synthetic Organic Chemistry* (3) Wrenn
Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening.)

257 *Theoretical Organic Chemistry* (3) Sager
Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252. (1963–64 and alternate years: fall—evening.)

291–92 *Seminar: Recent Developments in Chemistry* (1–1) The Staff
(Academic year—day.)

295–96 *Research* (arr.) The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
Laboratory fee, $18 a semester. (Academic year—as arranged; summer 1963.)

CLASSICAL LANGUAGES AND LITERATURES*

Professor J. F. Latimer *(Chairman)*
Lecturer A. B. Seidman
Associates R. G. Crawford, D. B. Beers

Bachelor of Arts with a major in Latin (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Latin 51–52 and History 39–40.
Required: in addition to the general requirements, pages 73–77, eighteen semester hours in Latin beyond first-group courses, Art 111, Philosophy 111. A reading knowledge of French or German, preferably both, is strongly recommended.

Latin 1–2 and 3–4, or Greek 11–12 and 13–14 satisfies the foreign language requirement, see page 66.

LATIN AND GREEK

FIRST GROUP

1–2 *First-year Latin* (3–3) Crawford
A year course: credit is not given for the first half until the second half is completed. Functional presentation of the essentials of the language, with appropriate reading selections; development of English derivatives; introduction to Roman life and literature. (1963–64 and alternate years: academic year—evening.)

* The Staff of Instruction is for the academic year 1962–63.

Beers

3–4 *Second-year Latin* (3–3)
A year course: credit is not given for the first half until the second half is completed. A continuation of the first-year course, but with increased emphasis on Latin readings which illustrate Roman life and literature; continuation of vocabulary building in English. Prerequisite: Latin 1–2 or two years of high school Latin. (1963–64 and alternate years: academic year—day.)

The Staff

11–12 *First-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Essentials of grammar with appropriate reading selections. (Offered 1964–65.)

Latimer

13–14 *Second-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Review of grammar; rapid reading from selected Greek authors. (Academic year—evening.)

The Staff

49–50 *Latin Grammar and Readings* (3–3)
Primarily for graduate students preparing for reading examinations. Undergraduates admitted by permission of the instructor. No academic credit for graduate students. *First half:* essentials of Latin grammar with appropriate reading selections. *Second half:* continuation of grammar with selections from various Latin authors for rapid reading. (Academic year—as arranged.)

The Staff

51–52 *Introduction to Latin Prose and Poetry* (3–3)
Selections from Cicero and Caesar, Virgil and Ovid. Prerequisite: Latin 3–4 or three years of high school Latin. (Not offered 1963–64.)

SECOND GROUP

The Staff

101–2 *Roman Comedy* (3–3)
Selected plays from Plautus and Terence. Prerequisite: Latin 51–52 or permission of the Instructor. (Academic year—evening.)

The Staff

111–12 *Roman History and Philosophy* (3–3)
Selections from Cicero, Sallust, Lucretius, and Livy. Prerequisite: Latin 51–52 or permission of the Instructor. (Not offered 1963–64.)

The Staff

121–22 *Roman Lyric Poetry and Satire* (3–3)
Selections from Catullus, Horace, Juvenal, and Martial. Prerequisite: Latin 101–2 or permission of the Instructor. (Not offered 1963–64.)

COURSES IN ENGLISH TRANSLATION

FIRST GROUP

Latimer

71–72 *Greek and Roman Backgrounds in Literature* (3–3)
Selected Greek and Roman masterpieces and their literary influence. This course satisfies the literature requirement, see footnote, page 234. (*First half:* spring—day. *Second half:* fall—day.)

SECOND GROUP

The Staff

109–10 *Greek and Roman Drama* (3–3)
Selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca; selected comedies of Aristophanes and Menander, Plautus and Terence; historical development of classical drama. (Not offered 1963–64.)

CLASSICAL HEBREW

FIRST GROUP

21–22 *First-year Classical Hebrew* (3–3) Seidman
A year course: credit is not given for the first half until the second half is completed. Fundamental principles of the language with practice in reading simple narrative prose. (Not offered 1963–64.)

23–24 *Second-year Classical Hebrew* (3–3) Seidman
A year course: credit is not given for the first half until the second half is completed. Review of grammar and exegesis of selected passages from the Hebrew text of the Old Testament. (Academic year—day.)

DERMATOLOGY AND SYPHILOLOGY *

Professor H. F. Anderson *(Chairman)*
Assistant Clinical Professors Hayden Kirby-Smith, J. Q. Gant, Jr., W. G. Ballinger, C. S. Brown
Associates Reuben Goodman, D. J. Demis
Clinical Instructors Manuel Landman, Henry Bryan, P. L. Repetto

214 *Dermatology and Syphilology* The Staff
Lectures on diseases of the skin and syphilis. (Spring—2 hours a week for eight weeks.)

317–18 *Clinic* Brown
Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* The Staff
Dermatology and syphilology in infants and children. Children's hospital. (Two hours a week as arranged in rotation during academic year.)

409–10 *Clinic* The Staff
Clinical demonstrations, diseases of the skin. University Hospital. (Two hours a week as arranged in rotation during academic year.)

* The Staff of Instruction is for the academic year 1962–63.

ECONOMICS *

Professors A. E. Burns, D. S. Watson, T. W. Holland, J. W. Kendrick†, W. E. Schmidt, Sar Levitan *(Research)*
Professorial Lecturers S. H. Axilrod, Margaret deVries
Associate Professors J. W. Skinner *(Chairman)*, Henry Solomon *(Research)*
Associate Professorial Lecturers R. L. Sammons, D. J. Edwards, R. E. Moor
Assistant Professors Ching-Yao Hsieh, S. J. Hunter
Lecturers M. E. Fieser, Paul Gekker, S. E. Haber

Bachelor of Arts with a major in Economics (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Economics 1–2 and Statistics 51.

Required: the general requirements, pages 73–77, and (1) Economics 101–2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of Economics 101–2 and 121; (3) Statistics 111, 112; (4) nine semester hours of other second-group courses selected with the approval of the adviser.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—See the Department of History.

Master of Arts in the field of Economics.—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements, pages 78–81, including Economics 210, at least nine semester hours in economic theory, and a thesis (Economics 299–300).

Doctor of Philosophy.—See pages 83–90.

Master of Arts in Government with a major in Economic Policy.—Prerequisite: an undergraduate major in Economics at this University, or the equivalent. See pages 157–59, 161.

FIRST GROUP

1–2 *Principles of Economics*‡ (3–3) Skinner and Staff
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—evening; spring—day and evening; summer 1963.)

SECOND GROUP

101–2 *Economic Analysis* (3–3) The Staff
Analysis of demand, supply, and pricing; theory of national income determination. (*First half:* fall—day and evening; spring—evening; summer 1963. *Second half:* fall—day; spring—day and evening.)

104 *History of Economic Thought* (3) Burns
History of the major schools of economic thought; influence of changing problems on the development of economic theory. (Spring—day.)

105 *Business Cycles* (3) Kendrick
Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (Fall—evening.)

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave fall semester 1962–63.
‡ Economics 1–2 is prerequisite to all other courses in Economics.

121 *Money and Banking* (3) **Hunter**
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (Fall—day and evening; spring—evening; summer 1963.)

123 *Monetary Theory and Policy* (3) **Hunter**
Principal contemporary theories, background of recent monetary policy. (Spring—day.)

133 *The Economy of the Soviet Union* (3)
Development and main features of the economic life of the Soviet Union (See History 145–46 and Geography 196). (Not offered 1963–64.)

141 *Unionism and Collective Bargaining* (3) **Holland**
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (Fall—day.)

142 *Labor Economics* (3) **Holland**
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Spring—day.)

161–62 *Public Finance and Taxation* (3–3)
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (Academic year—evening.)

165 *Government Control of Economic Activity* (3) **Watson**
Changing role of government in promoting and regulating economic activity, types and spheres of control. (Fall—day.)

181–82 *International Economics* (3–3) **Schmidt**
First half: survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening; summer 1963—Economics 181 (3).)

185–86 *Economic History and Problems of Latin America* (3–3) Sammons
Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

198 *Proseminar in Economics* (3) **Skinner**
Comprehensive survey of economics. Prerequisite: Economics 101–2 and 121. (Fall and spring—as arranged.)

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns
Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

203–4 *Contemporary Price Theory* (3–3) Watson
The theory of relative prices from Marshall to the present. (Academic year—evening.)

205 *Theory of Employment and Income* (3) **Kendrick**
Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)

206 *Business Cycle Analysis* (3) Kendrick
Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)

208 *The National Income* (3) Kendrick
The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)

210 *Seminar in Economics* (3) Skinner
Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)

212 *Seminar in Price Theory* (3) Watson
Advanced topics in the theory of relative prices. Prerequisite: Economics 203–4 or the equivalent. (Not offered 1963–64.)

213 *Economic Thought in the Twentieth Century* (3) Burns
Continuation of Economics 201–2. The principal trends in economic thought during the present century. (Not offered 1963–64.)

215–16 *Mathematical Economics* (3–3) Solomon
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)

217–18 *Survey of Economics* (3–3) Watson
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)

219 *Managerial Economics* (3) Watson (Summer
Analysis of price, production, and inventory policies of business firms. 1963.)

221–22 *Monetary Theory* (3–3) Hunter
Contemporary monetary theories. (Academic year—evening.)

223–24 *Monetary Policy and Central Banking* (3–3) Axilrod
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)

231–32 *Quantitative Economics* (3–3) Solomon
Selected topics in quantitative economics. (Not offered 1963–64.)

241 *Unionism, Collective Bargaining, and Labor Economics* (3) Holland
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)

244 *Problems in Unionism, Collective Bargaining, and Labor Economics* (3) Holland
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)

246 *Foreign Labor Movements* (3) Holland
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)

247 *Labor Relations in the Federal Service* (3) Holland
Admission by permission of the instructor. (Fall and spring—evening.)

251–52 *Economic Development* (3–3) Schmidt
The theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening; summer 1963—Economics 251 (3).)

253 *Productivity Analysis* (3) Kendrick
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)

261–62 *Public Finance and Fiscal Policy* (3–3) Moor
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)

263–64 *Theory of Public Finance* (3–3) deVries
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)

265–66 *Theory of Economic Policy* (3–3) Watson
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)

267 *The Soviet Economy* (3) Gekker
Development of the Soviet-type economy; organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145–46, 247, and Geography 166.) (Fall—evening.)

281–82 *International Economics* (3–3) Schmidt
First half: the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)

284 *United States Foreign Economic Policy* (3) Schmidt
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Not offered 1963–64.)

285–86 *Economic Development of Latin America* (3–3) Sammons
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)

287–88 *Latin America: Trade and Commodity Policy* (3–3)
Tariffs and exchange control systems(bilateral and general commercial agreements, terms of trade. (Not offered 1963–64.)

290 *Seminar in International Economics* (3) Schmidt
Advanced topics in international economics. Prerequisite: Economics 281–82 or the equivalent. (1963–64 and alternate years: spring—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following economics courses for students enrolled in Navy Graduate Financial Management Program and Air Force Advanced Management Program.

191 *Foreign Economic Policies and Problems* (3)

195 *Governmental and Industrial Economics* (3)

EDUCATION *

Professors J. H. Fox, B. H. Jarman, B. S. Root *(Chairman)*, G. L. Angel, W. T. Carroll, F. N. Hamblin

Professorial Lecturers Madaline Remmlein, Florence Lumsden, H. O. Johnson, Anthony Marinaccio, C. D. Hutchins, J. B. Holden, B. D. Joy, J. P. Walsh, D. D. Darland, K. E. Brown, Kathryn Cook, J. C. Lang, J. F. Rogers, H. M. Wilson

Associate Professors Mary Coleman†, W. A. McCauley, Carol St. Cyr, H. G. Detwiler, R. E. Baker, Martha Rashid

Associate Professorial Lecturers LuVerne Walker, R. R. Reed, Eugenia Nowlin, Beverly Crump, Mary Scott, John Giancaspro, Hazel Wilson, Helen Mitchell, J. L. Cameron, Samuel Kavruck, Zelda Kosh, C. O. McDaniels

Assistant Professors R. W. Eller, J. G. Boswell, Margaret McIntyre

Lecturers Ward Whipple, H. L. Cushman, Marcella Bernstein, Joanne Parker, D. W. Hunt, R. J. Kubalak, R. S. Westerlund, W. E. Amos

FIELD STUDIES

Director J. W. Charles, *Assistant Director* M. H. Jessup

FIELD SERVICE COORDINATORS

Alexander Anderson, *Assistant Principal, Washington-Lee High School, Arlington, Va.*; Mary Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.*; C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

Bachelor of Arts in Education.—Prerequisite: the Education curriculum, page 69, or the equivalent, or a certificate of graduation from an approved normal school or the equivalent.

Required: the satisfactory completion of a program of at least sixty-six semester hours in addition to the general education background courses, page 69. Each program is planned individually to meet the certification requirements of the student, see pages 136–38 and the School of Education Catalogue.

Master of Arts in Education.—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually. The following areas of specialization are available: (1) adult education, (2) classroom teaching—to include strengthening mastery of teaching field, (3) comparative education, (4) curriculum, (5) elementary education, (6) employee training, (7) guidance, (8) history of education, (9) philosophy of education, (10) reading, (11) school administration—secondary or elementary school principalship, and (12) secondary education. (See pages 140–42.)

Advanced Professional Certificate.—See pages 142–43.

Doctor of Education.—See pages 143–45.

A *Reading Clinic* — Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for individual diagnosis, $35; for individual instruction, $5 a lesson; for semi-individual instruction, $4 a lesson; for instruction in small groups with common reading difficulties, $3.25.

* The Staff of Instruction is for the academic year 1962–63.
† On leave of absence fall semester 1962–63.

SECOND GROUP

108 *Human Development, Learning, and Teaching* (3) McIntyre
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. (Fall and spring—day and evening; summer 1963.)

111 *Methods in Elementary Education* (12) McIntyre and Staff
For seniors in the elementary school curriculum. Methods, materials, appraisal, and field experiences in elementary schools. Problems and procedures in teaching the language arts (including reading, literature for children, oral and written expression, spelling, and handwriting), arithmetic, science, and social studies. Planning units of work, general classroom procedures, and evaluation of pupil progress. Observation and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—day.)

112 *Educational Measurement* (3) McCauley
Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall—day; spring—evening; summer 1963.)

113 *Elementary School Art* (3) Nowlin
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, $4.50. (Fall and spring: lecture and laboratory (3 hours)—evening, field work—as arranged; summer 1963 (Crump).)

114 *Elementary School Music* (3) Mitchell
For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963.)

115 *Teaching of Reading in the Elementary School** (3) Parker
A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123 or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963.)

116 *Elementary School Social Studies** (3) Trundle
Lecture (2 hours), field work (2 hours). For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Summer 1963.)

117 *Elementary School Science** (3) St. Cyr
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963).

120 *Elementary School Arithmetic** (3)
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963 (Baker).)

123 *Society and the School* (3) St. Cyr and Staff
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and sociological development of education at the local, national, and international levels; cooperation of the school with other community agencies; organization and operation of schools; functions of school personnel. (Fall and spring—day and evening; summer 1963.)

* This course may not be taken by students who have completed or who plan to enroll in Education 111.

128 *Children's Literature** (3) Walker
For teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963 (McIntyre).)

131 *Principles and Methods of Secondary School Teaching* (3) Boswell, Myers, Stallings
Lecture (2 hours), field work (2 hours). For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 108 and 123. (Fall and spring—day.)

134 *Student Teaching in Secondary Schools* (6 to 9) Boswell and Staff
For seniors in the secondary school curriculum. Sections A, B, and C are for academic majors. Section D is for physical education majors (Myers, Stallings). Student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (134A: fall and spring—as arranged. 134B, 134C, 134D: spring—as arranged.)

135 *Student Teaching in Elementary Schools* (9) McIntyre
For seniors in the elementary school curriculum. Student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (135A and 135B: spring—as arranged.)

SPECIAL METHODS COURSES†

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

136 *Teaching English* (2 to 4) Lumsden
Prerequisite†: 18 semester hours in English. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

137 *Teaching Speech* (2 to 4) Kosh
Prerequisite†: 18 semester hours in Speech or the permission of the instructor. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

138 *Teaching Social Studies* (2 to 4) Boswell
Prerequisite†: 24 semester hours of social studies. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963.)

140 *Teaching Mathematics* (2 to 4) Brown
Prerequisite†: Mathematics through calculus. (Spring—evening.)

144 *Teaching Science* (2 to 4) Eller
Prerequisite†: 24 to 40 semester hours of science. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

146 *Teaching Foreign Languages* (2 to 4) McSpadden
Prerequisite†: 18 semester hours of one foreign language. (Spring—day.)

148 *Teaching Home Economics* (2 to 4) Towne
Prerequisite†: 30 semester hours of Home Economics. (Spring—as arranged.)

150 *Teaching Business Subjects* (2 to 4) Shott
Prerequisite†: 30 semester hours of business education. (Spring—Saturday morning.)

* This course may not be taken by students who have completed or who plan to enroll in Education 111.

† Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

THIRD GROUP*

203–4 *Comparative Education* (3–3)
Comparison of foreign educational systems with those of the United States, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—evening.)

205–6 *The Curriculum*† (3–3) St. Cyr
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. (Academic year—Saturday morning; summer 1963—Education 205 (3).)

207 *Curriculum Materials*† (3) St. Cyr
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. (Fall—evening.)

208 *Human Development, Learning, and Teaching* (3) Lang
Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring—evening.)

209 *Child Growth and Development* (3) Rashid
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school. (Fall—evening.)

210 *Adolescent Growth and Development* (3) Rashid
A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships. (Spring—evening.)

212 *Educational Measurement* (3) McCauley
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments. (Fall—evening.)

213–14 *History of Education* (3–3) Wilson
First half: the European backgrounds of American education. *Second half:* the evolution of the American school system. (Academic year—evening.)

215 *Education of Exceptional Children*† (3)
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance. (Not offered 1963–64.)

216 *Education of Slow-learning Children*† (3) Amos
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. (Summer 1963.)

217–18 *Philosophy of Education*† (3–3)
First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school. (Academic year—evening; summer 1963—Education 217 (3).)

* A degree from an accredited institution is prerequisite to all third-group courses.
† Prerequisite: adequate professional preparation.

219 *Elementary School Classroom Procedures** (3) Baker
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. (Summer 1963.)

221 *Early Childhood Education** (3) McIntyre
The philosophy and principles underlying the teaching of children four to seven years of age. Emphasis is on organization, equipment, methods, and materials for promoting the growth needs of young children. (Summer 1963.)

223–24 *Reading Problems** (3–3) Coleman
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems. (Academic year—evening; summer 1963—Education 223 (3).)

226 *Reading in Secondary Schools* (3) Coleman
For experienced teachers. Consideration of special problems in the content areas; diagnostic and corrective techniques and materials for the classroom teacher; reading improvement programs. (Spring—evening.)

227 *Basic Issues in Elementary Education* (3) Baker
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices. (Fall—evening.)

228 *Instructional Areas in Elementary Education* (3) Baker
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education. (Spring—evening.)

229 *Administration of Elementary Education* (3) Carroll
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. (Fall—evening; summer 1963.)

231 *Secondary School Classroom Procedures** (3) Giancaspro
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. (Fall—evening; summer 1963 (Boswell).)

233 *Audio-visual Education** (3) Kubalak
Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7. (Spring: Saturday morning; summer 1963.)

241 *Education of the Gifted** (3)
For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects. (Fall—evening; summer 1963.)

243 *Human Relations in the Classroom** (3) Marinaccio
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Summer 1963.)

245 *School and Community** (3) Angel
The school as an important member of a team of social agencies that builds the community. (Fall and spring—evening; summer 1963.)

247 *Vocational Education** (3) Walsh
Development in the United States; current conceptions, agencies involved, problems, and trends. (Not offered 1963–64.)

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* Prerequisite: adequate professional preparation.

251 *Guidance in Elementary and Secondary Schools** (3) Detwiler
A survey course; scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. (Fall and spring—evening; summer 1963 (McDaniels).)

252 *Organization and Administration of Guidance Services* (3)
Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in Measurement and Guidance. (Not offered 1963–64.)

253 *Analysis of the Individual for Purposes of Counseling* (3) Detwiler
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent. (Fall—evening.)

254 *The Junior High School** (3) Root
Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Not offered 1963–64.)

255–56 *Secondary Education** (3–3) Root
First half: current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields. (Academic year—evening; summer 1963 (Root, Giancaspro).)

257 *Occupational and Educational Information* (3) Detwiler
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. (Spring—evening; summer 1963.)

258 *Techniques of Counseling* (3) McCauley
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems will be discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258. (Fall and spring—evening; summer 1963.)

259–60 *Secondary School Management** (3–3) Johnson
For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management, construction of the master schedule; leadership problems incident to the development of new policies and programs. (Academic year—evening.)

261–62 *Practicum in Guidance* (3–3) Detwiler
Supervised practical instruction in school guidance. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged.)

263–64 *Employee Training* (3–3) Walsh, Root
First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training. (Academic year—evening.)

265–66 *Teaching Secondary School English—Materials, Resources, Content* (3–3) Lumsden
A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature. (Academic year—evening.)

* Prerequisite: adequate professional preparation.

267–68 *Teaching Secondary School Social Studies—Materials, Resources, Content* (3–3) Whipple

A refresher course for teachers of the Social Studies. Discussion of new approaches to course content. Offered in cooperation with the departments of History, Political Science, Geography and Regional Science, Economics, and Sociology and Anthropology. (Not offered 1963–64.)

269–70 *Business Management of Schools I–II* (3–3) Carroll

First half: philosophy, responsibilities, and function of the business management office in public education institutions; responsibilities of boards of education, superintendents, and central office staffs. *Second half:* planning and financing; building utilization, operation, and maintenance; transportation; lunchrooms; purchasing, storing, and distribution; accounting and budgetary procedures; depreciation, insurance, and bond issues. (Not offered 1963–64.)

271 *The Teacher and School Administration** (3) Carroll, Fox

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. (Fall—Saturday morning; spring—evening; summer 1963.)

272 *The Teacher and School Supervision** (3) Carroll, Fox

Nature, organization, human relationships, and techniques. (Fall—evening; spring—Saturday morning; summer 1963.)

273–74 *Teacher Education** (3–3) Darland

First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching field preparation, professional sequences, laboratory experiences. (Academic year—evening.)

275 *School Finance** (3) Carroll

Educational financial theory, practice, and control, including methods of financing. (Spring—evening.)

276 *Seminar: Public Relations in School Administration** (3) Carroll

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Fall—evening.)

277 *Administration of School Personnel** (3) Carroll

Techniques and problems of administration related to more effective service of staff personnel. (Spring—evening; summer 1963.)

278 *School Law** (3) Remmlein

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Not offered 1963–64.)

279–80 *Adult Education** (3–3) Detwiler, Holden

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—evening; summer 1963—Education 279 (3).)

283–84 *Higher Education** (3–3) Rogers

First half: development, present status, and outlook for American colleges; purposes of higher education, current and projected programs; trends in curriculum, instruction, administration, and evaluation of outcomes. *Second half:* principles in development of college programs; study of curricula in liberal arts and professional fields; relationship of institutional services and facilities to the instructional program. (Not offered 1963–64.)

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* Prerequisite: adequate professional preparation.

285 *Extra-classroom Activities** (3)
Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. (Not offered 1963–64.)

287–88 *Clinical Study of Reading Problems** (3–3) Coleman
For advanced students. Diagnostic and corrective work under supervision of the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223–24 or the equivalent. Material fee, $5 a semester. (Academic year—evening.)

289 *Supervisory Problems in Reading** (3) Coleman
For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered 1963–64.)

291 *Planning the School Plant* (3) Cameron
Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Not offered 1963–64.)

293–94 *Research* (3–3) The Staff
Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor. (Academic year—as arranged.)

295 *Educational Research Methods and Procedures* (3) McCauley
Required of all candidates for graduate degrees in Education. To be taken early in the student's graduate program. Prerequisite: an elementary course in statistics. (Fall and spring—evening; summer 1963.)

296 *Seminar in Educational Research* (3) McCauley
Designed to help students analyze scientific approaches to problems in education; evaluate the application of research techniques to typical problems; define, organize, and conduct research studies; and prepare proposals for sponsored research. Required of all candidates for the Doctor of Education degree and open, with permission, to candidates for other advanced degrees. Prerequisite: Education 295 or the equivalent. (Spring—evening.)

297 *Reading in Education* The Staff
To assist those preparing for the comprehensive examinations. No credit toward degree requirements. Tuition fee, $36. (Fall and spring—late afternoon; summer 1963.)

299–300 *Thesis* (3–3) The Staff
Required of all Master of Arts candidates writing Master's theses. (Academic year—as arranged.)

* Prerequisite: adequate professional preparation.

ENGINEERING AND APPLIED SCIENCE *

Professors C. H. Walther, M. A. Mason, R. A. Hechtman, P. A. Crafton, Louis de-Pian, N. T. Grisamore, H. E. Smith, Ben Lindberg, Robert Heller, M. S. Ojalvo
Adjunct Professors L. A. Guildner, A. G. McNish, Gunther Sorger, Churchill Eisenhart, Theodore Young
Professorial Lecturers F. K. Harris, Laurence Heilprin, Ezra Glaser, William Dorfman, Saul Gass, Harold Gold
Associate Professors John Kaye, G. M. Arkilic, A. C. Murdaugh, R. R. Fox, C. D. Ferris
Assistant Professors R. L. Dedrick, E. H. Braun, R. E. Cronin, John Eftis, R. M. Moore, A. C. Meltzer
Lecturers George Abraham, P. H. Sawitz, L. S. Rotolo, J. A. Cunningham, Howard Eisner, Milton Gussow, D. C. Rohlfs, T. B. Wiggins, Chester Peterson
Instructors T. P. Carroll, D. K. Anand, Ronald Feit

Engineering Technologist Certificate.—For requirements see pages 116, 117–18, 128–29.
Bachelor of Science (Civil Engineering).—For requirements see pages 117–22.
Bachelor of Science (Communications).—For requirements see pages 117–22.
Bachelor of Science (Control Systems).—For requirements see pages 117–22.
Bachelor of Science (Electrical Engineering).—For requirements see pages 117–22.
Bachelor of Science (Electronics).—For requirements see pages 117–22.
Bachelor of Science (Energy Conversion).—For requirements see pages 117–22.
Bachelor of Science (Engineering Science).—For requirements see pages 117–22.
Bachelor of Science (Machine Computers).—For requirements see pages 117–22.
Bachelor of Science (Measurement Science).—For requirements see pages 117–22.
Bachelor of Science (Mechanical Engineering).—For requirements see pages 117–22.
Bachelor of Science (Structures).—For requirements see pages 117–22.
Bachelor of Science (Theoretical and Applied Mechanics).—For requirements see pages 117–22.
Master of Engineering Administration.—For requirements see pages 122–23, 124–25.
Master of Science.—For requirements see pages 122–23, 123–24.
Doctor of Science.—Pages 125–27.

APPLIED SCIENCE

UNDERGRADUATE

3 *Graphical Communication* (3)
Principles and methods of graphical communication, sketching, schematic diagrams, nomographs, charts and graphs, elements of descriptive geometry, spatial representation.

4 *Logic and Method in Analysis* (3)
Logic, methods of investigation and reasoning, hypothesis, inference, probability, analysis in the physical sciences and engineering.

5–6 *Finite Mathematics and Statistics in Science I–II* (3–3)
Statements, sets and functions, numbers systems, probability theory, linear algebra, convex sets, finite chains, basic statistical principles and methods, applications.

* The Staff of Instruction is for the academic year 1962–63.

10 *General Field Theory* (3)
General theory of fields, Laplace and Maxwell equations, conformal mapping, particle motion in fields, potential.

11 *General Wave Theory* (3)
Basic wave mechanics; wave equations.

12 *Electromagnetic Wave Theory* (3)
Electromagnetic waves in bounded media, radiation, resonators, guides, microwaves.

29–30 *General Network Theory I–II* (3–3)
Network theorems and functions, Laplace transform, Fourier integral, linear and nonlinear circuits, stability, matrices, domains.

32 *Network Analysis* (3)
Solutions of equations using transformation calculus, poles and zeroes of network functions, correlation of domains, matrix representation, nonlinear circuit analysis.

50 *Information Theory* (3)
Basic concepts of information, sources, processes, errors, coding, transmission, capacity, noise.

55 *Control Theory* (3)
Theory of automatic control systems, steady-state and transient analysis, transfer functions, stability criteria.

58 *Analysis Methods* (3)
Methods for analyzing problems; use of fundamental principles of mathematics, science, and engineering in problem analysis.

59–60 *Introductory Analytical Mechanics I–II* (3–3)
Introduction to vector mechanics; statics and dynamics of particles, solids, and fluids; kinematics; behavior of solids and fluids acted upon by forces; Newton's Laws; concepts of stress and strain, with applications.

62 *Soil Mechanics* (3)
Soil mechanics theory, lateral pressure, seepage, failure, slope stability, bearing capacity, behavior under loading.

63 *Fluid Dynamics* (3)
Theory of compressible and incompressible fluid motion; concepts of potential, circulation and vorticity, lift and drag; shock.

64 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow, flow around immersed bodies, airfoil theory, shock wave theory, thermodynamics.

65–66 *System Dynamics I–II* (3–3)
Dynamics of linear systems, analogies, transient and steady-state analysis, Lagrange's equations, Hamilton's principle, introduction to gyrodynamics.

67 *Analytical Kinematics* (3)
Theoretical study of the motion of constrained and unconstrained rigid bodies.

68 *Deformable Body Mechanics* (3)
Analysis of stress and strain, introduction to theory of elasticity, introduction to theory of perfectly plastic solids.

70 *Earth Science* (3)
Formation of and properties of soils and rock, climatology, hydrology, ground water and river flow, seismology.

75 *Digital Circuitry and Systems* (3)
Basic concepts of digital programmed systems, mathematical foundations and techniques for logical design, computer logic and circuitry.

80 *Introductory Astronomy* (3)
Coordinate systems and nomenclature, description of astronomic systems, stars, stellar physics, elementary celestial mechanics.

85 *Thermodynamics* (3)
Theoretical study of fundamental concepts, first and second laws, equations of state, entropy, phase mixtures.

86 *Energy Conversion* (3)
Energy forms and states, energy fields, concepts of efficiency, conversion methods, limitations.

87 *Heat Transfer Theory* (3)
Theoretical concepts of conduction, convection, radiation; field and potential theory applied to conduction.

99 *Intermediate Comprehensive Evaluation Examination* (0)
Required of all students at the completion of the Introductory Level and prior to admission to the Intermediate Level. No academic credit; no fee.

101–2 *Materials Science I–II* (4–4)
Relations of materials structure to its properties, quantum and solid state concepts, crystal and lattice structures, plastics, cermets, elements of physical metallurgy, control of material properties and behavior.

105–6 *Fundamentals of Measurement Science I–II* (4–4)
Standards; measurements; error, accuracy, and precision; design of experiments.

107 *Statistics in Metrology* (3)
Qualitative and quantitative aspects of measurement, statistical methods, uncertainty and accuracy, corrections, sampling.

110 *Management Analysis* (3)
Principles of schematic, conceptual, and mathematical models; mathematical programming; operations analysis.

111 *Operations Research* (3)
Characteristics and capabilities of operations research, role in decision making, methods and techniques.

112 *Quantitative Techniques* (3)
Theoretical study of mathematical, statistical, and quantitative techniques for management.

121–22 *Structural Theory I–II* (4–4)
Theory and analysis of behavior of structures, model analysis, numerical methods, matrix algebra methods, collapse methods.

130 *Electrical Energy Conversion* (3)
Generalized machine theory, thermionics, thermoelectricity, fuel cells' photovoltaic principles, introduction to electromechanical components, elements of magnetohydrodynamics.

198 *Undergraduate Research* (1 to 3)
Research problems approved by the Faculty (credit is assigned in relation to work undertaken).

199 *Advanced Comprehensive Evaluation Examination* (0)
Required of all students at the completion of the Intermediate Level and prior to admission to the Advanced Level. No academic credit; no fee.

GRADUATE

201 *Automatic Control* (3)
Advanced theory of automatic control. Systems analysis, multiple loop systems, nonlinear systems.

211 *Mathematical Methods in Applied Science I* (3)
A course in such topics as functions of complex variables, infinite series, linear vector spaces and matrices, and partial differential equations.

212 *Mathematical Methods in Applied Science II* (3)
Mathematical topics include: introduction to tensor analysis, calculus of variations, finite differences, and integral equations.

216 *Advanced Dynamics* (3)
Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyrodynamics; operational methods. Prerequisite: permission of the instructor.

217 *Analytical Mechanics* (3)
Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.

218 *Mechanics of Orbits and Trajectories* (3)
Celestial mechanics. Orbits and trajectories in force fields. Dynamics of space vehicles.

219 *Mechanics of Continua* (3)
Mechanics of elastic, plastic, and viscous solids, and of fluids; introduction to theory and formulation of basic equations.

220 *Nonlinear Mechanics* (3)
Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.

221 *Theory of Elasticity I* (3)
Introduction to mathematical theory of elasticity, analysis of strain and stress, generalized Hooke's law, equilibrium equations. Beltrami-Mitchell equations, strain energy functions, torsion, general flexure.

222 *Theory of Elasticity II* (3)
First and second boundary-value problems in plane elasticity, uniqueness of solutions, simply and multiply connected regions, three-dimensional problems, thermoelasticity, vibration of elastic solids, variational methods.

223 *Celestial Mechanics* (3)
General equations of motion, Lagrange's planetary equations, disturbing function, Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation.

227 *Experimental Stress Analysis* (3)
Applications of the theory of elasticity in the analysis of strain and stress; theory of gaging for static and dynamic strain and stress measurements.

230 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow and thermodynamics of compressible fluids.

231 *Fluid Dynamics* (3)
Theory of compressible and incompressible fluid motion including potential motion, circulation, and vorticity; mathematical treatment of flow at sub-, trans- and supersonic velocities; normal and oblique shock; and elements of heat transfer.

233 *Problems in Applied Science* (3)
Investigation of problems in engineering and applied science, emphasizing imaginative and systematic application of fundamental principles in engineering, physics, and mathematics.

241 *Science of Materials* (3)
Relation of the atomic and microscopic structure of materials to their physical and mechanical properties and their mechanical behavior in applications.

242 *Magnetohydrodynamics* (3)
Study of the interaction of electromagnetic and fluid fields. Dynamics of conducting fluids in electromagnetic and magnetic fields.

250 *Theory of Structures I* (3)
Classical and modern methods of structural analysis; basic theory of plane structures; statically indeterminate structures, including continuous beams and trusses and arches; limitload analysis; special problems.

251 *Theory of Structures II* (3)
Statically indeterminate structural theory, including single and multi-span rigid frames and arches, deflection theory for arches and suspension bridges, thermal stress, and failure of structures.

252 *Theory of Structural Dynamics* (3)
Analysis of elastic structures under various dynamic loadings, both steady-state and transient, including vibrations of rigid frames, plates, and thin shells.

260 *Theory of Plates and Shells* (3)
Classical and modern theories of plates and shells, plates and cylindrical shells under different loadings and boundary conditions, equations for plates including shear, rotationally symmetric shells under small deformations, and their applications.

261 *Plasticity of Solids* (3)
Plastic flow and fracture of solids; theory of elastic perfectly plastic solids, including basic concepts, limit analysis of beams, rigid frames, and plane stress problems; theory of fracture.

262 *Theory of Elastic Stability* (3)
Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, arches, plates, stiffened plates, and shells; inelastic buckling.

263 *Field Analysis and Potential Theory* (3)
Fields of force, divergence, Newtonian potentials at points of free space, solutions of Laplace's equations, harmonic functions, logarithmic potential.

264 *Electrodynamics* (3)
Presence of moving matter in electromagnetic fields, force and energy in moving systems, relativistic concepts, tensors.

265 *Electromagnetic Waves* (3)
Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators, and microwave devices.

266 *Electromagnetic Wave Propagation* (3)
Ground waves; space-wave propagation, atmospheric effects, ionosphere; maximum usable frequency; bandwidth.

270 *General Network Analysis* (3)
Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeros of network functions, correlation of time and frequency domains, elements of network synthesis.

271 *Advanced Network Analysis* (3)
Advanced theory of lumped and distributed linear networks, matrices, stability, activity.

272 *Active Network Theory* (3)
Analysis of two-port networks; matrix representation of linear active networks; vacuum-tube and semi-conductor circuit theory; concepts of feedback, stability, and oscillators. Nonlinear circuit analysis, modulation, detection, communication systems.

273 *Network Synthesis* (3)
Basic techniques in the synthesis of linear two- and three-terminal passive networks, positive real functions; Foster, Cauer, Brune, Bott-Duffin, Darlington procedures; elements of active network synthesis.

274 *Analysis of Modulation and Noise* (3)
Analysis of Fourier series and integrals of signals and linear networks, modulation and spectra, noise analysis including probability method of determining power spectra.

275 *Physical Electronics* (3)
Physical principles underlying operation of various electronic devices including vacuum tubes, electron lenses, transistors, and recent solid-state electronic devices.

280 *Thermodynamics* (3)
Reversible and irreversible processes, equilibrium, ideal and van der Waal's gases, dilute solutions, phase equilibria, electric and magnetic effects, radiation. Introduction to kinetic theory and statistical mechanics.

281 *Heat Transfer* (3)
Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan Boltzmann and Planck laws for radiation, Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.

282 *Gas Dynamics* (3)
Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

283 *Hypersonic Fluid Dynamics* (3)
Small disturbance theory, Newtonian theory, constant-density solutions, thin shock layers, viscous interactions, free molecule and rarefied gas flows.

284 *Combustion Processes* (3)
Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes.

285 *Reaction Kinetics* (3)
Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems.

286 *Information Theory* (3)
Discrete and continuous systems; ergodic ensembles and random processes; correlations, filtering, prediction; redundancy.

287 *Automata and Self-organizing Systems* (3)
Effectively computable functions and Turing machines, digital computational methods in Boolean algebra, combinational circuits and their analysis, recursion circuits and their analysis, reliability of automata, networks of automata, artificial intelligence.

298 *Research* (1 to 3)
Research as arranged.

299–300 *Thesis* (3–3)

ENGINEERING

UNDERGRADUATE

1 *Engineering Planning and Economics* (3)
Analysis, planning, and economics of engineering projects using mathematical and modern computational methods.

2 *Regional and Urban Planning* (3)
Engineering aspects of regional and urban planning: including transportation, water supply and sewerage, public safety and convenience, utilities, and natural resources.

10 *Hydraulic Engineering* (3)
Hydraulic system design; including pipe networks, river and channel flow; drainage and irrigation, water supply, and sewerage.

11–12 *Design of Structures I–II* (3–3)
Analysis and design of structures under static and dynamic loading, including wood, metal, and concrete structures; plastic design; ultimate strength design.

13–14 *Structural Design Laboratory I–II* (3–3)
Analysis and design of solutions to structural problems.

15 *Structural Dynamics* (3)
Analysis and design of structures under vibration, earthquake, blast, and other dynamic loading; energy methods; applications of matrix algebra.

19–20 *Engineering Electronics I–II* (3–3)
Analysis and design of: vacuum tube and solid state devices; voltage and power amplifiers; feedback amplifiers; oscillators; equivalent, relaxation, and computing circuits.

22 *Digital Techniques* (3)
Automatic programming techniques, self-detecting and correcting codes, logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams.

23–24 *Computer Laboratory I–II* (3–3)
Use of digital and analog computers; including design, logical circuitry, programming, operation, maintenance, and troubleshooting.

30 *Applied Thermodynamics* (3)
Vapor cycles, combustion, gas dynamics, equilibrium, multiphase mixtures.

31–32 *Thermal Power I–II* (3–3)
Analysis and design of systems and components in heat-power, gas and vapor turbine, internal combustion engine, heat pump, and nuclear power systems.

35 *Fluid Machinery* (3)
Theory and design of dynamic machines; including turbomachinery, torque converters and couplings, and jet machines.

49–50 *Precise Electrical Measurements I–II* (3–3)
Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power, resistance, capacitance, inductance, energy, phase angle, frequency and time; dielectric and magnetic measurements; topics in high-frequency measurement including field strength, signal-to-noise ratio, impedance, attenuation.

52 *Introductory Transducers and Instrumentation* (3)
Theory, design, and application of simple transducers; design of instrumentation of one-type systems; analysis and design of simple transducer instrumentation.

53 *Advanced Transducers and Instrumentation* (3)
Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types.

54 *Precise Mechanical Measurements* (4)
Techniques for precise measurement of mass, time, weight, density, force, pressure, vibration, acceleration, flow, and viscosity.

55 *Precise Heat Measurements* (4)
Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure, thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters.

101–2 *Communications Laboratory I–II* (3–3)
Analysis and design of solutions to problems in communications and information.

103–4 *Control Laboratory I–II* (3–3)
Analysis and design of electrical, mechanical, pneumatic, hydraulic, and combined control systems.

105–6 *Electrical Engineering Laboratory I–II* (3–3)
Design projects involving electrical and electromechanical devices and systems.

107–8 *Electronics Laboratory I–II* (3–3)
Design projects involving electronic devices and instrumentation.

109–10 *Energy Conversion Laboratory I–II* (3–3)
Analysis and design of solutions to problems in converting energy states and forms.

111–12 *Mechanical Engineering Laboratory I–II* (3–3)
Design projects involving mechanical, thermal, thermomechanical, and electromechanical devices.

199 *Engineering Research* (1 to 3)
Undergraduate research projects as approved by the Faculty. (Credit is assigned in relation to the work undertaken.)

GRADUATE

201 *Metal Structures* (3)
Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design.

202 *Ultimate Strength of Reinforced Concrete Structures* (3)
Modes of failure of reinforced concrete structures; experimental data on failure; ultimate strength concepts for the analysis of beams, slabs, and columns.

203 *Prestressed Concrete Structures* (3)
Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members.

204 *Geotechnics in Soil Mechanics* (3)
Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement; flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action.

205 *Theoretical Soil Mechanics* (3)
Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics.

206 *Foundation Engineering* (3)
Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling and water front structures.

210 *Space Structures* (3)
Theory of structures in three dimensions; trusses, rigid frames, and thin-shell structures.

211 *Experimental Structural Analysis* (3)
Experimental analysis of truss, rigid frame, plate, and shell structures; large- and small-deflection models; similitude.

212 *Concepts of Structural Design* (3)
Mechanical behavior and failure of structures as determined by properties of materials, nature of structure, and type of loading; selection of type of structure; structural analysis, its applications and possible simplifications.

220 *High-frequency Electronics* (3)
High frequency operation of electron tubes and semiconductor devices, transit time, bunching, pulse techniques.

221 *Industrial Electronics* (3)
Gaseous tubes and applications; rectifiers; timing circuits; induction and dielectric heating; regulation and control, magnetic amplifiers.

222 *Electronic Measurements in Medicine* (3)
Theory of measurements in biological areas, field and circuit theory as a foundation for measurements, techniques for electronic measurements on biological specimens, problems in medicine and psychology with emphasis on measurements and measuring devices.

223 *Physical Basis for Medical Electronics* (3)
Electrical and acoustical properties of biological material; structural components of biological material as they affect its dielectric and acoustical behavior, electrical relaxation phenomena in general and their application to biological material in particular, applications in diathermy and electrocardiography, impedance determination.

230 *Digital Techniques* (3)
Automatic programming techniques, self-detecting and correcting codes, advanced logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams.

231 *Digital Circuitry and Systems* (3)
Introduction to basic concepts of modern digital programmed systems, mathematical foundations and techniques for logical design of digital circuits, electronic design of computer circuits.

232 *Digital Systems* (3)
The programmed system; system design of digital computers, special-purpose digital computers, reliability, data-processing techniques, analog-to-digital and digital-to-analog techniques.

233 *Microwaves* (3)
Transmission lines; waveguides; antennas; resonators; amplifiers and oscillators; klystrons, magnetrons, traveling wave tubes.

234 *Antennas* (3)
Maxwell's equations, radiation, impedance, directional characteristics, arrays, aperture antennas.

235 *Communication Systems* (3)
Radar, television; ultrahigh frequency systems; navigational aids.

240 *Power Transmission* (3)
Transmission lines, exact and approximate equivalent circuits, standing waves, filtering, protection, radio interference, high voltage, line configurations.

241 *Power Generation* (3)
Steam, hydroelectric, and nuclear plants; fuel cells; magnetohydrodynamics; efficiency; reheat cycles; stability; load factors; generator swings.

242 *Power Systems* (3)
Substations, transformers, distribution networks, short and open circuit analysis, symmetrical components, stability, network analyzers.

270 *Advanced General Metrology* (3)

271–72 *Probability and Statistics of Metrology I–II* (3–3)
Probability distributions, discrete and continuous distributions; sampling; combinational analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analysis of experiments, Latin Square experiments, factorial experiments, block and lattice design.

273 *Microwave Measurements* (3)
Measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies. Characteristics and Q of resonant devices.

274 *Precise Optical Measurements* (3)
Optical constants of lens systems; aberration; resolving power; illumination in focal plane; image evaluation, magnification, index of refraction; color and color temperature.

298 *Research* (1 to 3)
Research as arranged.

299–300 *Thesis* (3–3)

ENGINEERING ADMINISTRATION

GRADUATE

201 *Engineering Administration I* (3)
The application of scientific method to the (1) planning element and (2) organizing of the administrative process. Characteristics of plans, establishing objectives and goals, determining policies and procedures, preparing plans to meet stated objectives and goals, organization for planning, testing of plans. Characteristics of organization, patterns of departmentation authority, responsibility, levels of specialization, coordination, decentralization, work division, staff, committees. Introduction to analysis for decision making.

202 *Engineering Administration II* (3)
Sequential to Engineering Administration I. The application of scientific method to the (3) directing or managing element and (4) control element of the administrative process. Personnel management, organized labor, executive leadership, communication, implications of automation, systems analysis for effective administration. Methods of evaluation and control of operations, e.g., financial analysis, budgeting, administrative audits.

204 *Administration of Engineering Contracts* (3)
Study of types of contracts, proposal preparation, evaluating contracts, negotiation, contract extension policies and procedures, appraisal of capabilities of contractors.

207 *Personnel Administration* (3)
Study of personnel functions with emphasis on relationships within organizations which utilize the services of engineers and scientists: employment, health, safety, education and training, financial compensation, union relations, collateral benefits and services, human relations and personnel research practices in engineering and industry.

210 *Engineering Law* (3)
Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, anti-trust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and development contracts.

253 *Management of Production Processes and Facilities* (3)
Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs.

254 *Principles and Procedures of Automatic Data Processing Systems* (3)
Logic of computers, arithmetic and control units, computers as systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes.

255 *Administration of Research and Development* (3)
Contemporary practices of administrators of scientific and engineering research and development for the purpose of finding uniformities, characteristics, and conceptual schemes; relation of such findings to accepted managerial concepts, and projection of

their implications on contemporary managerial heirarchies and organizational structures.

261 *Economic Analysis in Engineering Planning* (3)
Important concepts and theories employed in economic analysis of engineering projects. Application of tools and techniques used in various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field.

263 *Quantitative Techniques of Engineering Administration* (3)
Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

271 *Operations Research* (3)
Background and application of operations research; history, characteristics, capabilities, administrative considerations, methods and techniques, including construction of conceptual and mathematical models.

272 *Problems in Operations Research* (3)
Field experience in operations research on a team basis. Each small group locates an actual problem and formulates and solves it by operations research models. Class evaluation of progress.

275 *Linear Programming* (3)
The basic computational, theoretical, and applied areas with emphasis on the general linear programming problem; simplex computational procedure; duality; transportation and assignment problems; production scheduling problem; zero-sum two-person games; applications and recent developments.

276 *Theory of Games* (3)
Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, mixed strategies, minimax concept, connections with linear programming and decision functions, two-person and n-person zero and nonzero sum games.

277 *Queuing Theory* (3)
Study and analysis of operational systems with variables in arrivals and service, Monte Carlo analysis, optimization methods.

285 *Seminar in Administrative Problems* (3)
Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: admission to candidacy and completion of at least 18 semester hours of graduate study.

298 *Research in Engineering Administration* (arr.)
Application of established principles to new engineering administrative situations; the development of new knowledge of administration. Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

299–300 *Thesis* (3–3)

ENGLISH *

Professors E. S. Shepard, F. S. Tupper, C. D. Linton, C. W. Cole *(Chairman)*, R. H. Moore, J. H. Coberly†, P. H. Highfill, Jr., J. G. Allee, Jr., J. P. Reesing, Jr.‡
Adjunct Professor Carroll Hollis
Associate Professors W. L. Turner, Muriel McClanahan, R. H. Walker, Jr., R. E. Gajdusek
Assistant Professors Elizabeth Wright, M. E. Lyon, R. C. Rutledge, Louise Clubb
Lecturer J. J. Monroe
Instructors Dorothy Clark, L. E. Dodd, Arlyn Edelman, G. C. Landon, Frank Turaj
Associates J. S. Toomey, Eileen Allen, Karen Holum, K. T. Simendinger, V. C. Trofi

Bachelor of Arts with a major in American Thought and Civilization (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 67.

Required: the general requirements, pages 73–77, and the grade "pass" on the American Thought and Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history—the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 179–80) intended to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

Bachelor of Arts with a major in English Literature (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 67. It is recommended that prospective majors elect English 91–92 from among the listed offerings.

Required: the general requirements, pages 73–77, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199–200) to assist the student in preparing himself for the major examination. A detailed description of the major is available in the Office of the Dean of Columbian College.

Master of Arts in the field of American Literary and Cultural History.—Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of the above majors at this University must take a candidacy examination.

Required: in addition to the general requirements, pages 78–81, the following specific requirements must be met: twelve of the required semester hours must be of seminar study, six in American history and six in American literature; twelve of the required semester

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave spring semester 1962–63.
‡ On sabbatical leave fall semester 1962–63.

hours must be of second and third group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six semester hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

Master of Arts in the field of English and American Literature.—Prerequisite: an undergraduate major in English Literature or American Thought and Civilization at this University; or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not taken either of the above majors at this University must take a candidacy examination. The student offering split preparation (English and American literature) will be examined in English and American literature.

Required: in addition to the general requirements, pages 78–81, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination on American literature and on English literature from 1600.

Master of Arts in the field of English Literature.—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four semester hours in English literature above the sophomore level. The student who has not passed the major examination in English at this University must take a candidacy examination which, in its scope and difficulty, is comparable to the major examination in English.

Required: in addition to the general requirements, pages 78–81, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a final written examination.

Master of Arts in the field of Linguistics.—See page 284, and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in English.—Prerequisite: the Education curriculum, page 69.

Required: the English option and the professional courses listed in the School of Education Catalogue.

ENGLISH COMPOSITION*

FIRST GROUP

A *English for Foreign Students* (3) Allee and Staff

A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1963.)

B *English for Foreign Students* (3) Allee and Staff

For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and styles. (Fall—evening; spring—day and evening.)

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English. Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students *not* required to follow the Columbian College of Arts and Sciences sequence.

1 *English Composition** (3) — Moore and Staff
Review of grammar, exercises in composition, readings. (Fall and spring—day and evening; summer 1963.)

1X *English Composition** (3) — Moore and Staff
An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets five hours a week and carries 3 semester hours of credit. The tuition fee is $133 (the regular fee of $36 a semester hour, plus an additional fee of $25). (Fall and spring—day and evening; summer 1963.)

2 *English Composition** (3) — Moore and Staff
For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X. (Fall and spring—day and evening; summer 1963.)

4 *English Composition** (3) — Moore and Staff
The second half of the six-hour English Composition course required of students in Columbian College. A course in critical analysis and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1963.)

11 *The Writing of Reports* (3) — Turner and Staff
Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X, and 2 or 4. (Fall and spring—day and evening.)

SECOND GROUP

109 *Expository Writing* (3) — McClanahan
A study of types of expository writing with weekly exercises. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—evening.)

113 *Narrative Writing* (3) — Gajdusek
Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—day and evening.)

114 *The Writing of Fiction—the Short Story* (3) — Gajdusek
Prerequisite: English 113; consent of instructor. (Spring—evening.)

117–18 *The Writing of Fiction—the Novel* (3–3) — Gajdusek
Writing a novel. Prerequisite: English 114; consent of instructor. (Academic year—evening.)

ENGLISH LITERATURE

FIRST GROUP

51–52 *Introduction to English Literature*† (3–3) — Tupper and Staff
A historical survey. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

91–92 *Introduction to European Literature*† (3–3) — Shepard and Staff
Consideration of various types. Prerequisite: English 1 or 1X. (Academic year—day and evening.)

* See footnote on page 234.
† See footnote (*) on page 236.

SECOND GROUP*

121–22 *English Literature from the Beginnings to 1500* (3–3) Allee
First half: English literature prior to Chaucer. *Second half:* Chaucer. (*First half:* not offered 1963–64. *Second half:* spring—evening.)

125 *Introduction to English Linguistics* (3) Allee
The development of the English language in a historical treatment of English grammar. (Fall—evening.)

129–30 *Elizabethan Nondramatic Literature* (3–3) Tupper
Nondramatic literature from 1485 to 1601. (Not offered 1963–64.)

135–36 *Shakespeare* (3–3) Tupper
(Academic year—evening; summer 1963—English 135 (3).)

139–40 *The 17th Century* (3–3) Reesing
First half: poetry and prose from 1603 to 1660. *Second half:* Milton. (Academic year—day; summer 1963—English 139 (3).)

141–42 *The Neoclassical Movement* (3–3) Highfill
Poetry and prose from 1660 through the mid-18th century. (Not offered 1963–64.)

151–52 *The Romantic Movement* (3–3) Reesing
From the mid-18th century through Shelley and Keats. (Academic year—day.)

161–62 *Victorian Literature* (3–3) Shepard
Poetry and prose from 1830 to 1900. (Academic year—day.)

165–66 *The 20th Century* (3–3) Linton
British poetry, prose, and drama since 1900. (*First half:* fall—day. *Second half:* not offered 1963–64.)

181–82 *The English Novel* (3–3) Clubb
Major English novelists from the 18th century to the present day. (Academic year—evening.)

183–84 *The English Drama* (3–3) Highfill
First half: concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day. (Academic year—day; summer 1963—English 183 (3).)

192 *Medieval Legend and Saga* (3) Allee
Celtic and Norse. (Summer 1963.)

199–200 *Proseminar: Readings for the English Literature Major* (3–3) Tupper, Highfill, Reesing
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

223–24 *Old English* (3–3) Allee
English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf. (Not offered 1963–64.)

235–36 *Studies in Shakespeare and His Contemporaries* (3–3) Tupper
Prerequisite: English 135–36. (Academic year—evening; summer 1963—English 236 (3).)

* All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.
English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 125

239–40 *Studies in 17th Century Literature* (3–3) Reesing
Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton. (Not offered 1963–64.)

241–42 *Studies in Neoclassical Literature* (3–3) Highfill
Prerequisite: English 141–42. (Academic year—evening.)

251–52 *Studies in the Romantic Movement* (3–3) Reesing
Prerequisite: English 151–52. (Not offered 1963–64.)

261–62 *Studies in Victorian Literature* (3–3) Shepard
Prerequisite: English 161–62. (Academic year—evening.)

265–66 *Studies in 20th Century Literature* (3–3) Linton
Eliot and his contemporaries. (Not offered 1963–64.)

273–74 *Research Methods and Bibliographical Materials* (3–3)
For description of course see American Literature 273–74, page 238.

295–96 *Studies in the History of English Literary Criticism* (3–3) Shepard
Open to undergraduates with the approval of the instructor. (Not offered 1963–64.)

299–300 *Thesis* (3–3) The Staff

AMERICAN LITERATURE

FIRST GROUP

71–72 *Introduction to American Literature** (3–3) Cole and Staff
A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

170 *The American Short Story* (3) Coberly
The historical development of the short story in America. (Fall—day.)

171–72 *Studies in American Literature* (3–3) Lyon
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51–52 or 71–72. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

173–74 *Major American Poets* (3–3) Lyon
Advanced critical study of significant writers and movements. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day; summer 1963—English 174 (3).)

175–76 *American Drama* (3–3) Cole
Historical and critical study of significant plays and forms. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years; academic year—evening; summer 1963—English 176 (3).)

* All students enrolled in curricula leading to Bachelor's degrees in Columbian College who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish, will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.
English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 = prerequisite to all second-group courses except English 171–72.

177–78 *American Fiction* (3–3) Coberly
Historical and critical study of significant novels and short stories. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

179–80 *Proseminar: Readings for American Thought and Civilization Majors* (3–3) The Staff
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

271–72 *Seminar in American Thought* (3–3) Walker
Intensive consideration of specific periods and themes, primarily literary, in the history of American civilization. Prerequisite: English 171–72 or the equivalent. (Not offered 1963–64.)

273–74 *Research Methods and Bibliographical Materials* (3–3)
To acquaint graduate students with the principal sources of bibliography and with typical problems in research. (Academic year—evening.)

277–78 *Studies in American Fiction* (3–3) Coberly
Prerequisite: English 177–78 or the equivalent. Open to the undergraduate with the approval of the instructor. (Not offered 1963–64.)

281–82 *Reading Course in American Civilization* (3–3) Walker
A consideration of the principal descriptive and interpretative works dealing with American civilization, with emphasis on the interdisciplinary understanding of this subject. Prerequisite: at least one upper-division or graduate course in both American literature and American history. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

287–88 *Reading Course in American Fiction* (3–3) Coberly
Primarily for graduate students, designed to cover the literature and the critical materials for which the student will be responsible on comprehensive and final examinations. (*First half:* not offered 1963–64. *Second half:* spring—evening.)

289–90 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72 *Greek and Roman Backgrounds in Literature* (3–3)

Education 136, *Teaching English*

History 151–52, *English History*

Philosophy 111–12, *History of Philosophy*

Speech B, *American Speech for Foreign Students*

Speech 102, *Oral Interpretation of Literature*

GEOGRAPHY AND REGIONAL SCIENCE*

Professor R. D. Campbell *(Chairman)*
Associate Professors J. T. Davis, H. W. Westermann†
Associate Professorial Lecturer M. F. Levine
Assistant Professor A. R. Gassaway

Bachelor of Arts with a major in Geography (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Geography 51, 52, and Geology 1–2.

Required: in addition to the general requirements, pages 73–77, twenty-six semester hours of Geography beyond first-group courses, including Geography 103–4 and 189–90, twelve hours from Group A and six hours from Group B.

Group A: Geography 126, 127, 141–42, 145, 146. Group B: Geography 151, 153, 154, 155, 156, 161, 164, 165, 166, 167, 168.

Bachelor of Arts with a major in Urban and Regional Development (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Geography 51, 52; Geology 1–2; and Statistics 91.

Required: in addition to the general requirements, pages 73–77, thirty-two semester hours of Geography which must include Geography 103–4, 133, 134, 141–42, and 173–74. Required also are Political Science 104 and Statistics 117. It is recommended that electives be chosen from among the following courses: Sociology 126, 135, 137, 147; Economics 161–62; Political Science 146; History 111–12; and Philosophy 121–22.

Bachelor of Arts with a major in Regional Science (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Geography 51, 52; Geology 1–2; Statistics 91; and Mathematics 21, 22, 23, 24.

Required: in addition to the general requirements, pages 73–77, thirty semester hours of Geography, which must include Geography 103–4, 133, 134, 141–42, 199–200. Required also are Statistics 117, 118, 157–58; and Philosophy 121–22.

Master of Arts in the field of Geography.—The general requirements, pages 78–81, including Geography 201–2, 205–6, and 299–300.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Science in Cartography.—See page 242, "Courses Offered in Special Programs" and the College of General Studies Catalogue for complete details.

Bachelor of Arts in Education with a teaching field in Geography.—Prerequisite: the Education curriculum, page 69.

Required: the Geography option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

51 *Introduction to Geography* (3) **The Staff**

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall—day; spring—evening; summer 1963.)

52 *World Regions* (3) **The Staff**

The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall—evening; spring—day; summer 1963.)

SECOND GROUP

103–4 *Cartography* (3–3) **The Staff**

A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting; elementary map projections; map and graph plan-

* The Staff of Instruction is for the academic year 1962–63.
† On leave of absence 1962–63

ning design and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester. (Academic year—Saturday morning.)

124 *Land Capabilities* (3) Davis
Evaluation of land capabilities based on analysis of locational, physical, economic, and social land characteristics. Principles of site analysis and best use. Systems of measurement of area potential. (1963–64 and alternate years: fall—evening.)

125 *Transportation Complexes* (3) Davis
A study of transportation networks and systems by which people, things, and ideas are given varying degrees of place utility. An analysis of the role of transportation in urban, national, and international relationships. (1963–64 and alternate years: spring—evening.)

126 *World Economies* (3)
Description and comparison of differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (1964–65 and alternate years.)

127 *World Population and Settlement* (3)
Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (1964–65 and alternate years.)

133 *Regional Industrial Structures* (3)
The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1964–65 and alternate years.)

134 *Location of Industry* (3)
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1964–65 and alternate years.)

137 *Industrial Planning for Underdeveloped Areas* (3)
The appraisal of industrial development potentials in non-industrial areas; the preparation and implementation of industrial development plans; peculiar problems of industrial development in traditional societies; the role of industrialized countries, with particular emphasis on United States responsibilities. (Fall—day.)

141–42 *Urban Settlement* (3–3) Davis
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1963–64 and alternate years: academic year—day.)

145 *World Cultural Geography* (3) Campbell
A study of differences in national character structures; modal behavior patterns and personality traits typical of various cultures; difficulties these differences present in interpersonal relations and intercultural communications. (Fall—day.)

146 *World Political Geography* (3) Campbell
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Spring—day.)

151 *United States** (3) (Formerly Geography 181)
(Not offered 1963–64.)

153 *Western Europe** (3) (Formerly Geography 183)
(1964–65 and alternate years.)

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* Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 185–86, *Economic History and Problems of Latin America*; History 164, *South America since Independence;* and Political Science 177, *Recent Trends in Latin American Politics and Government.*

154 *The Mediterranean** (3) (Formerly Geography 184)
(1964–65 and alternate years.)

155 *Africa** (3) (Formerly Geography 185) Gassaway
(Fall—day; summer 1963; offered as Geography 185 (3).)

156 *The Middle East** (3) (Formerly Geography 186) Gassaway
(Spring—day.)

161 *Latin America** (3) (Formerly Geography 191)
(Fall—day.)

164 *Communist China** (3) (Formerly Geography 194)
(1964–65 and alternate years.)

165 *Eastern and Southeastern Asia** (3) (Formerly Geography 195)
(Spring—day.)

166 *The Soviet Union** (3) (Formerly Geography 196)
(1964–65 and alternate years.)

167 *The Pacific** (3) (Formerly Geography 197)
(Not offered 1963–64.)

168 *Australia** (3) (Formerly Geography 198)
(Not offered 1963–64.)

173–74 *City Planning: Theory and Practice* (3–3)
Theories of city functions and structures; evaluation of urban activities, value systems; analysis of contemporary urban problems; optimum designs for future cities; theory and techniques of planning; action techniques; implementation of plans. (1964–65 and alternate years.)

175–76 *City Planning: Survey and Design* (3–3)
Information systems for city planning; methods of analysis of urban data; and the design of proposed urban development and renewal. (*First half:* summer 1963. *Second half:* not offered 1963–64.)

179–80 *Readings in Urban and Regional Development* (1–1) The Staff
(Academic year—as arranged.)

189–90 *Readings in Geography* (1–1) The Staff
(Academic year—as arranged.)

199 200 *Theory of Regions* (3–3)
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1963–64.)

THIRD GROUP†

201–2 *Seminar: History and Philosophy of Geography* (3–3)
A year course; credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1964–65 and alternate years.)

205 6 *Area Data Collection and Analysis* (3–3) Davis
A year course; credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information; methods and systems of data collection; quantitative and qualitative methods of analysis; systems of synthesis. (1963–64 and alternate years; academic year—evening.)

211–12 *Reading Course in Economic Geography* (3–3)
The development of economic geography as a systematic approach to regional analysis, the literature of economic geography, research methods. (Not offered 1963–64.)

* See footnote on page 240.
† Senior major or graduate status is required in all third-group courses.

233–34 *Seminar: Regional and Urban Planning* (3–3)
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (Academic year—evening.)
Campbell

241–42 *Seminar: Place and Culture* (3–3)
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (1963–64 and alternate years: academic year—evening.)
Gassaway

251–52 *Seminar: World Problem Areas* (3–3)
A study of those parts of the world which have become matters of international concern, whether because of their political or social instability, unsound economic development, or aggressive tendencies. An evaluation of the complex of factors which have created the "problems". (Academic year—evening.)
The Staff

295–96 *Research* (3–3)
(Academic year—as arranged.)
The Staff

299–300 *Thesis* (3–3)

COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following courses for students undertaking work toward the degree of Bachelor of Science in Cartography, which is administered by the College of General Studies. For information concerning the degree in Cartography, see the brochure on the subject.

Cartography Program

Geography

51 *Introduction to Geography* (3)
52 *World Regions* (3)
115–16 *Physical Geography* (3–3)
124 *Land Capabilities* (3)
125 *Transportation Complexes* (3)

Cartography

1 *Map Interpretation* (3)
11 *Cartographic Drafting and Descriptive Geometry* (3)
12 *Topographic Surveying* (3)
13 *Higher Surveying* (3)
17–18 *Elementary Photogrammetry* (3–3)
110 *Map Projections* (2)
111 *Map Reproduction* (1)
155 *Elementary Geodesy* (3)
156 *Geodetic Astronomy* (3)
160 *Theory of Errors and Geodetic Adjustments* (3)
191–92 *Map and Chart Construction* (3–3)

Oceanography

101–2 *Introductory Oceanography* (3–3)

GEOLOGY *

Professor Geza Teleki *(Chairman)*
Professorial Lecturers C. L. Christ, Michael Fleischer, H. T. Evans, Jr., I. G. Sohn, Nicholas Hotton
Associate Professor G. V. Carroll
Associate Professorial Lecturers Daniel Appleman, P. M. Kier, J. T. Dutro, Jr.
Lecturer Irving Friedman

Bachelor of Arts or *Bachelor of Science with major in Geology (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68. The following first-group courses must be included: Geology 1-2, 12; Chemistry 11–12; Physics 11, 12; Mathematics 21.

Required: in addition to the general requirements, pages 73–77, twenty-seven semester hours in Geology beyond first-group courses for the Bachelor of Arts degree, thirty-three for the Bachelor of Science degree.

Master of Arts or *Master of Science in the field of Geology.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or the equivalent.

Required: the general requirements, pages 78–81. Candidates must take their Master's Examination (page 81) which must be passed before the writing of the thesis is begun. A reading knowledge examination in French, German, or Russian must be passed before the second half of the work is started.

FIRST GROUP

1-2 *Introductory Geology* (3–3) The Staff
Lecture (2 hours), laboratory and field trip (2 hours). A survey course covering the principles of geology. Laboratory fee, $6 a semester. (Academic year—day; summer 1963.)

12 *Minerals and Rocks* (3) Carroll
Lecture (2 hours), laboratory (3 hours). Introduction to the common minerals and rocks and their environments; identification of minerals by determination of their physical properties and by the use of elementary chemical tests. Prerequisite: Geology 1. Laboratory fee, $8. (Spring—day.)

SECOND GROUP

101 *History of Geological Sciences* (2) Teleki
Lectures on the development of geological thought and the history of geological and related sciences. (1964–65 and alternate years.)

107 *Dynamic Geology* (3) Teleki
Lecture (3 hours), recitation (1 hour). The interrelation of endogene and exogene forces in the processes of sedimentation and vulcanism; geochemical and geophysical aspects of epicontinental and geosynclinal areas. Prerequisite: Geology 1; Physics 11, 12; or permission of the instructor. (Fall—day.)

111–12 *Mineralogy* (3–3) Carroll
A year course, credit is not given for the first half until the second half has been completed (except for chemistry majors who may receive credit for the first half only). Lecture (2 hours), laboratory (3 hours). *First half:* morphological crystallography

* The Staff of Instruction is for the academic year 1962–63.

and elementary aspects of optical crystallography with their application to the identification of minerals. *Second half:* optical mineralogy; identification of nonopaque minerals by use of the polarizing microscope. Prerequisite: Geology 1 and 12; Physics 11, 12, or permission of the instructor. Laboratory fee, $10 a semester. (Academic year—evening.)

Carroll

115 *Petrography* (4)
Lecture (2 hours), laboratory (4 hours). Megascopic and microscopic identification and classification of common rocks. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

116 *Sedimentary Petrography* (4)
Lecture (2 hours), laboratory (4 hours). The mineralogy and chemistry of sediments and sedimentary rocks; identification, description, and classification of sedimentary rocks with megascopic and microscopic methods. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

Carroll

117 *Introduction to Petrology* (3)
Lecture (2 hours), laboratory (3 hours). Lectures on petrogenic theory with emphasis on igneous and metamorphic rocks; laboratory work on the diagnosis of rock genesis by polarizing microscopic determination of mineralogical and textural characteristics. Prerequisite: Geology 115. Laboratory fee, $10. (Fall—evening.)

Carroll

122 *Structural Geology* (3)
Lecture (2 hours), laboratory and field trips as arranged. Genetic interpretation of geologic formations on the basis of their structures, with emphasis on applications to geological field work. Prerequisite: Geology 1–2 or 1 and 12. (Spring—day.)

The Staff

123 *Tectonics* (3)
Lecture (1 hour), laboratory (4 hours.) Introduction to specialized techniques of structural analysis, and to tectonic theory. Prerequisite: Geology 122. Recommended: Applied Science 3. (1964–65 and alternate years.)

The Staff

125 *Marine Geology* (3)
Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geology 1–2 or 1 and 12; for students of fields other than geology, permission of the instructor. (Fall—day.)

Teleki

128 *Geomorphology* (4)
Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 107 or Geography and Regional Science 115–16. (1964–65 and alternate years.)

Teleki

130 *Photointerpretation* (4)
Lecture (2 hours), laboratory (3 hours). Principles of photogrammetry, interpretation of geographical and geological features on aerial photographs, evaluation of data with stereoscopic methods. Laboratory fee, $10. (Spring—evening.)

Teleki

151–52 *Invertebrate Paleontology* (3–3)
Lecture (2 hours), laboratory (3 hours), field trips as arranged. Classification and evolution of fossil invertebrates, paleoecology of invertebrate organisms. Prerequisite: Geology 1–2 or 1 and 12. Laboratory fee, $8 a semester. (Academic year—day.)

Hotton

154 *Vertebrate Paleontology* (3)
Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (1964–65 and alternate years.)

Sohn

157 *Methods in Paleontology* (3)
An introduction to the principles and techniques of paleontological research, including the rules of zoological nomenclature. Prerequisite: Geology 151–52. (Fall—evening.)

163 *Sedimentation* (4)

Lecture (2 hours), laboratory (4 hours). Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 12 and 107. Laboratory fee, $10. (Fall—day.)

166 *Stratigraphy* (4) Teleki

Lecture (2 hours), laboratory (4 hours). Sedimentation, facies, evaluation of stratigraphic boundaries, principles of correlation, applied stratigraphic geology. Prerequisite: Geology 107, 115, 122, 163. (Spring—day.)

173 *Regional Geology* (3) Carroll and Staff

Lecture (3 hours), recitation (1 hour). Lecture and map work on the regional distribution of geological formations and structures. This course may be reelected for credit. Prerequisite: Geology 107, 122, or permission of the instructor. (Fall—day.)

192 *Laboratory Techniques* (2)

Lecture (1 hour), laboratory (3 hours). An introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, $15. This course may be repeated for credit, with the approval of the Department. (Fall and spring—evening.)

THIRD GROUP

205–6 *Seminar in Geology* (3–3) The Staff

Special topics. Does not repeat itself and may be elected in successive years. (Academic year—as arranged.)

211 *X-ray Crystallography* (3) Christ

The structure of crystals as determined by the X-ray method. (1964–65 and alternate years.)

212 *Crystal Chemistry** (3) Evans

Chemistry of the solid state. Bounding and coordination and the role of crystalline structure in chemistry and mineralogy. (1964–65 and alternate years.)

241 *Geochemistry** (3) Fleischer

Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species. (Fall—evening.)

244 *Isotope Geology** (3) Friedman

Investigation of geological phenomena by means of stable and unstable isotopes of elements and of changes in their abundance. (Spring—evening.)

251–52 *Micropaleontology* (4–4) Sohn

Lecture (2 hours), laboratory as arranged. Identification with the binocular microscope of Ostracoda and other fossil micro organisms. Micropaleontological techniques, paleontological research methods, taxonomy, and paleoecology. Age determination and correlation of stratigraphic units. Laboratory fee, $12 a semester. (1964–65 and alternate years.)

257–58 *Seminar in Paleontology* (3–3) The Staff

Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be reelected for credit. (Academic year—as arranged.)

267–68 *Seminar in Stratigraphy* (3–3) The Staff

Independent topics each semester. Can be elected for either semester does not repeat itself and can be reelected for credit. (1964–65 and alternate years.)

299–300 *Thesis* (3–3) The Staff

(Academic year—as arranged.)

* Prerequisite: an adequate background in physics and chemistry, to be determined in conference with the instructor.

GERMANIC LANGUAGES AND LITERATURES *

Professors W. K. Legner *(Chairman)*, Gretchen Rogers
Associate Professor J. C. King†
Assistant Professors H. D. Osterle, Klaus Thoenelt
Associate Anne Cordero

Bachelor of Arts with a major in Germanic Languages and Literatures (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67.

Required in addition to the general requirements, pages 73–77, German 51–52, plus eighteen semester hours in German courses, above the first group; reasonable proficiency in speaking and writing German; History 39–40 or the equivalent; six semester hours in Philosophy selected with the approval of the adviser. Majors in German are strongly advised to study French.

Master of Arts in Germanic Languages and Literatures.—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.

Required: the general requirements, pages 78–81, including a reading knowledge of French and a thesis in the field of German literature or linguistics.

Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).—Prerequisite: a Bachelor of Arts degree, preferably with a major in French, German, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required: the general requirements, pages 78–81, including a thesis and 24 semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, German, Mathematics, Psychology, and Spanish listed on pages 284–85.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in German.—Prerequisite: the Education curriculum, page 69.

Required: the German option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

1–2 *First-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

3–4 *Second-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: German 1–2 or two years of high school German. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *German Conversation and Composition* (3–3) Osterle

Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (Academic year—day.)

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave spring semester 1962–63.

47 *Beginning German for Reading Examination Candidates* (0) The Staff
Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, $108. (Fall and spring—evening; summer 1963.)

49 *German Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1963.)

51–52 *Introduction to German Literature* (3–3) Osterle
Prerequisite: German 4 or the equivalent. (Academic year—evening.)

SECOND GROUP

103–4 *Goethe's "Faust"—Parts I and II* (3–3) Legner
(1964–65 and alternate years.)

131–32 *German Literature of the 18th Century* (3–3) Rogers
The age of Lessing, Goethe, and Schiller. (1963–64 and alternate years: academic year—evening.)

141–42 *German Literature of the 19th Century* (3–3) King
Romanticism, Biedermeier period, Young Germany, Realism. (1963–64 and alternate years: academic year—evening.)

151–52 *German Literature of the 20th Century* (3–3) Rogers
(1964–65 and alternate years.)

179–80 *Advanced Composition for Undergraduate and Graduate Majors* (1–1) King, Legner
(Academic year—as arranged.)

THIRD GROUP

201–2 *Middle High German* (3–3) Legner
(1963–64 and alternate years: academic year—evening.)

205–6 *Gothic* (3–3) Legner
Introduction to the comparative study of Germanic languages. (1964–65 and alternate years.)

209–10 *Old High German* (3–3) King
(1964–65 and alternate years.)

213–14 *Old Norse* (3–3) Allee
(1963–64 and alternate years: academic year—evening.)

219 *Teaching German in College* (3) The Staff
Methodology, observation, and apprenticeship in college classes and the language workshop. (Fall—as arranged.)

223–24 *Linguistic Analysis of Modern German* (3–3) King
Treatment of phonetics, phonemics, morphology, and syntax. (1963–64 and every third year: academic year—day.)

225–26 *Seminar: Linguistics* (3–3) King, Allee
Bibliography, methodology, readings, and research problems. (1965–66 and every third year.)

227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) King
Old Indic language and literature. (1964–65 and alternate years.)

229 *German Literature of the 15th and 16th Centuries* (3) Legner
Transition from chivalric to bourgeois literature. The eras of Humanism and the Reformation as reflected in the principal literary works. (1963–64 and alternate years: fall—day.)

230 *German Literature of the 17th Century* (3) Legner
Imitation of foreign models. The literary societies. Preciosity. The beginnings of realism in the novel. Pietism. (1963–64 and alternate years: spring—day.)

231–32 *German Classicism* (3–3) Rogers
An advanced study and critique of the literature of the Goethezeit. Prerequisite: German 131–32 or the equivalent. (1964–65 and alternate years.)

241–42 *Seminar: German Romanticism* (3–3) King
Treatment of individual writers, groups, motifs, and tendencies. (1964–65 and alternate years.)

251–52 *Seminar: Studies in 20th Century German Literature* (3–3) Rogers
Special projects in fiction, drama, poetry, and criticism. (1963–64 and alternate years: academic year—day.)

261–62 *German-English and German-American Literary Relations and Interactions* (3–3) Osterle
Comparative study of major genres. Appraisal of influences. (Not offered 1963–64.)

271–72 *Seminar: German Literature* (3–3) Thoenelt
French-German literary interactions and contrasts. *First half:* Romantic and realistic narrative and essay. *Second half:* Romain Rolland, Camus, René Schickele, Heinrich Mann. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree in German. (Academic year—as arranged.)

GOVERNMENT AND BUSINESS *

Professors R. D. Kennedy, A. R. Johnson, J. L. Jessup, J. C. Dockeray *(Chairman)*, D. S. Brown, A. M. Woodruff, F. H. Gibbs, G. C. Jacobus, R. B. Eastin, R. F. Ericson, G. L. Lippitt, E. J. B. Lewis, T. H. Carroll, Waldo Sommers, J. O. Eaton

Professorial Lecturers S. N. Alexander, C. G. Berns, F. C. Brimacombe, J. L. Buckler, C. W. Clewlow, L. C. Collins, F. V. Demaret, L. W. Hamilton, Frank Higginbotham, C. E. Houston, Robert Kaye, J. L. Krieger, K. F. McClure, Edward McCrensky, C. A. McLaughlin, J. P. Murphy, M. E. Ogdon, J. M. Parrish, W. J. Peeples, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, K. E. Stromsem, Clark Tibbitts, W. G. Torpey

Associate Professors F. C. Kurtz, John Clayton *(Research)*, Leonard Prestwich, Leon Gintzig, D. R. Cloutier

Associate Professorial Lecturers H. M. Bain, Richard Bain, C. M. Campbell, O. C. Disler, J. F. Doubleday, C. E. Goode, George Idelson, V. B. Lewis, F. K. McTyier, J. A. Morrow, Ross Pollock, John Provan, J. R. Snitzler

Assistant Professors H. R. Page, R. E. Griffiths, A. D. Larson, B. B. Chandler, D. M. Faulkner

Lecturers R. J. Bond, Jerome Bracken, C. J. Brinkman, D. K. Good, Donald Gross, F. X. McKenna, J. F. Regan, D. E. Russell, M. H. Schwartz, L. E. This, D. E. Van Tijn, P. C. Tosini

* The Staff of Instruction is for the academic year 1962–63.

Instructor M. G. Gallagher
Associate J. K. Palmer

Associate in Arts (two-year terminal curriculum in Accounting).—For curriculum see page 72.

Bachelor of Business Administration with a major in Accounting or Business Administration.—See pages 149–51, 153–56.

Master of Arts in Government in the fields of Public Administration or Personnel Administration.—See pages 157–60, 161–62.

Master of Business Administration in the fields of Accounting, Business Administration, Health Care (including Hospital) Administration, or Personnel Administration.—See pages 157–59, 162–64.

Master of Public Administration in the fields of Public Administration or Personnel Administration.—See pages 157–59, 164–65.

Doctor of Business Administration or Doctor of Public Administration.—See pages 165–66.

Bachelor of Arts in Education with teaching fields in Business Education (School of Education).—Prerequisite: the Education curriculum page 69.
Required: the Business Education option and the professional courses listed in the School of Education Catalogue.

ACCOUNTING

FIRST GROUP

1–2 *Introductory Accounting* (3–3) The Staff
First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3 *General Accounting* (3) The Staff
Study of accounting systems and accounting for single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data. (Not offered 1963–64.)

SECOND GROUP

101 *Cost Accounting* (3)
Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; and analysis and interpretation of cost data. Prerequisite: Accounting 1–2. (Fall—day and evening; spring—day; summer 1963.)

102 *Advanced Cost Accounting* (3)
Advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor. (Spring—evening.)

111 *Financial Statement Analysis* (3) Kennedy, Steele
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—day; spring—evening; summer 1963.)

115 *Survey of Accounting* (3) Disler, Gallagher
Accounting for single proprietorships and corporations with emphasis on the use of accounting information in the management process; study of theory, terminology, and the analysis and interpretation of accounting data. Not open for credit to Accounting or Business Administration majors. (Fall and spring—evening; summer 1963.)

121–22 *Intermediate Accounting* (3–3) Gallagher, Simpson
First half: valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening.)

132 *Accounting Theory* (3) Kennedy
Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. (Spring—day; summer 1963.)

141 *Governmental Accounting* (3) Lewis
Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—evening.)

144 *Federal Accounting* (3) Lewis
Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of the United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor. (Not offered 1963–64.)

147 *Federal Budgeting* (3) Lewis
Budgetary procedures in the Federal Government, with emphasis on agency level budget programming, budget formulation and the techniques for achieving management objectives through the budget process; cost-based budgeting; expenditure programming and accrued expenditure limitations; revenue estimating. Prerequisite: Accounting 144 or extensive experience in federal budgeting. (Spring—evening.)

161 *Income Tax Accounting* (3) Kurtz
Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1–2. (Fall—day and evening.)

162 *Federal Tax Practice* (3) Kurtz
Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, and gifts; use of the tax services; assessment, collection, and refund procedures. Prerequisite: Accounting 161 or the permission of the instructor. (Spring—evening.)

171 *Auditing* (3) Kurtz
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22. (Fall—evening.)

172 *Auditing Practice* (3) Kurtz
Preparation of audit reports, accounting statements to be filed with Securities and Exchange Commission, and current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor. (Spring—evening.)

181 *Accounting Systems* (3) Lewis
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–22, and 171, or permission of the instructor. (Fall—evening.)

191 *Advanced Accounting* (3) Kurtz, Simpson
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. (Fall—evening; summer 1963.)

193 *Business Budgeting* (3) Lewis, Buckler
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

196 *Accounting Policy and Control* (3)
Accounting decision-making and analytical techniques, emphasizing the financial policy and operational role of the accountant and his contribution to enterprise management. Readings, cases, and problems form a basis for class discussions. Prerequisites: Accounting 101, 111, 161, and 171, or permission of the instructor. (Not offered 1963–64.)

198 *Professional Accounting Review* (3) Lewis
Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. (Spring—evening.)

THIRD GROUP

211–12 *Managerial Accounting* (3–3) Kennedy, Higginbotham
First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2 or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor. (*First half:* not offered 1963–64. *Second half:* summer 1963.)

215 *Survey of Managerial Accounting* (3) Higginbotham, Kennedy
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1–2, 3, or 115, or permission of the instructor. (Fall and spring—evening.)

231 *Contemporary Accounting Theory* (3) Kurtz, Higginbotham
Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Admission by permission of the instructor. (Fall—evening.)

246 *Governmental Accounting and Budgeting Problems* (3)
Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 144 or permission of the instructor. (Not offered 1963–64.)

275 *Internal Control and Auditing* (3) Kurtz
Internal accounting controls; review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offerod 1963–64.)

295–96 *Seminar in Accounting* (3–3) Kennedy
Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. (Academic year—evening.)

297–98 *Accounting Reading and Research* (3–3) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the accounting courses listed below for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

278 *Survey of Internal Control and Auditing* (3)

293 *Budget Preparation and Administration* (3)

BUSINESS AND PUBLIC ADMINISTRATION

THIRD GROUP

201 *Advanced Administrative Management* (3) Eastin, Ericson, Gibbs
(Formerly Business Administration 201 and Public Administration 210)
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall—day and evening; spring—evening; summer 1963.)

204 *Quantitative Factors in Administration* (3) Gross, Van Tijn
Developments in quantitative methods of administration. (Fall and spring—evening.)

205 *Seminar in Communication and Executive Action* (3) Morrow
(Formerly Public Administration 242)
Seminar in the communications processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication. (Spring—evening.)

206 *Personnel Management* (3) Torpey
(Formerly Public Administration 231)
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement. (Fall—evening.)

207–8 *Human Relations in Administration* (3–3) Eastin, Brown
(Formerly Business Administration 275–76 and Public Administration 241)
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. (Academic year—evening; summer 1963—Business and Public Administration 207 (3).)

262 *Contemporary Administrative Theory and Practice* (3) Ericson
(Formerly Public Administration 262)
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research. (Spring—evening.)

268 *Management Engineering* (3) Clewlow
(Formerly Business Administration 268 and Public Administration 216)
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study

of work measurements, work simplification management audits, and other management improvement programs. (Fall—day and evening; spring—evening.)

287 *Relation of Government to Business* (3) Clayton
(Formerly Business Administration 278 and 287)
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—evening.)

COURSE OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business and public administration courses for students enrolled in the Navy Graduate Financial Management Program and the Air Force Advanced Management Program.

206 *Personnel Management* (3)

BUSINESS ADMINISTRATION

SECOND GROUP

101 *Introduction to Business* (3) Chandler
(Formerly Business Organization and Combination)
The business environment; its effects upon the decision making process. (Fall—day and evening; spring—day.)

102 *Fundamentals of Management* (3) Ericson, Page
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. (Fall and spring—day and evening; summer 1963.)

105 *Personnel Management* (3) Eastin, Stonesifer
Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1963.)

106 *Problems in Personnel Management* (3) Eastin, Stonesifer
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105. (Spring—evening.)

107 *Labor Management Contracts* (3) Sommers, Larson
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations. (Fall—day; spring—evening.)

109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. (Fall and spring—evening.)

113 *Real Estate* (3) Doubleday
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation. (Fall—evening.)

121 *Risk Management* (3) Doubleday
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. (Spring—evening.)

122 *Life Insurance and Estate Planning* (3) Campbell
Life insurance contracts, their use in providing protection and estate development. (Spring—evening.)

131 *Business Finance* (3) Clayton, Page
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

136 *Credit Management* (3)
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2. (Spring—evening.)

138 *Investments* (3) Dockeray, Shaffner
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2, Business Administration 131. (Spring—day.)

141 *Basic Marketing* (3)
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1–2. (Fall—evening; spring—day; summer 1963—offered as *Principles of Marketing* (3).)

142 *Marketing Management Problems* (3)
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141. (Spring—day.)

143 *Marketing Research* (3)
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening.)

145 *Sales Management* (3)
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141. (Spring—evening.)

147 *Advertising* (3) Idelson
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Fall—evening.)

150 *Procurement and Materials Management* (3)
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government. (Spring—evening.)

153 *Principles of Personal Selling* (3)
Basic principles that underlie personal selling and the practical application of these principles. Emphasis is given to the human factor. Career opportunities and the role of selling in our economy are also considered. (Not offered 1963–64.)

158 *Traffic Management* (3) Kaye
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Not offered 1963–64.)

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Collins, McClure
(Fall—day and evening.)

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) Collins, Murphy
(Spring—day and evening.)

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) Murphy
(Fall—evening.)

171 *Principles of Transportation* (3) Clayton
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation. (Fall—evening.)

172 *Public Utilities* (3) Clayton
Legal and economic meaning of the public utility concept; development, services, economic characteristics, ratemaking, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries. (Spring—evening.)

173 *Commercial Motor Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services. (Not offered 1963–64.)

174 *Commercial Air Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport. (Not offered 1963–64.)

175 *Introduction to Foreign Trade* (3) Kaye
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2. (Fall—evening.)

176 *Exporting and Importing* (3) Kaye
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities. (Spring—evening.)

178 *International Business Operations* (3) Ogdon
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world. (Not offered 1963–64.)

181 *Manufacturing Production* (3) Page
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening.)

191 *Business Reports and Analyses* (3)
Sources of management information, array and analysis of data, interpretation and presentation of the findings. (Not offered 1963–64.)

193 *Management Communication* (3) Eastin, Morrow
A survey course in the problems of communication; written communication; style and format; oral communication: oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects. (Fall—evening; spring—day.)

195 *Controllership* (3)
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1–2. Open to seniors. (Fall—evening.)

198 *Case Problems in Management* (3) Eastin, Page
Principals and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall and spring—day and evening.)

THIRD GROUP

209 *Seminar in Personnel Management* (3) Eastin
Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening.)

210 *The Personnel Manager* (3) Jessup
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive. (Spring—evening.)

213 *Urban Land Management* (3) Woodruff
Background course for the developing curriculum in city planning. The course traces the forces that lie behind investment decisions which in turn determine the development of cities. (Spring—evening.)

218 *Survey of Data Processing* (3) Tosini
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems. (Fall and spring—evening.)

219 *Digital Computer Programming Concepts* (3) Schwartz
Machine functions and programmed control, instructions and programs, sub-routines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor. (Fall—evening.)

220 *Comparative Digital Computer Systems* (3) Schwartz
Properties and capacities of the range of equipments in use today, special purpose business equipments, recent and prospective equipment developments. Prerequisite: Business Administration 219. (Spring—evening.)

221 *Application of Digital Computers* (3) Alexander
The integration of data processing in the regular operations of the business or government organization and in establishing flows of management information, systems planning, the impact of Automatic Data Processing on management organization and decision making. Prerequisite: Business and Public Administration 204 and Business Administration 220. (Fall—evening.)

222 *Seminar in Advanced Digital Computer Concepts* (3) Alexander
Study of advanced problems in the design and application of computer systems. (Spring—evening.)

227 *Linear Programming* (3) Bracken
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. (Fall—evening.)

228 *Introduction to Operations Research for Management* (3) Bracken
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. (Spring—evening.)

231 *Corporate Financial Problems* (3) Dockeray, Houston
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. (Fall—evening.)

232 *Seminar in Business Finance* (3) Dockeray, Houston
Research in advanced financial problems. (Spring—evening.)

237 *Investment Analysis* (3) Dockeray, Shaffner
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138. (Fall—evening.)

238 *Seminar in Investments* (3) Dockeray, Shaffner
Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138. (Spring—evening.)

241 *Advanced Marketing Management* (3)
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis. (Fall—evening; summer 1963—offered as *Seminar in Marketing* (3).)

242 *Seminar in Marketing* (3)
Critical review of the development of marketing thought and important marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening.)

243 *Advanced Marketing Research* (3)
Marketing research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and results, applications of marketing research. Cases, selected readings, and research project. Prerequisite: a course in basic statistics. (Spring—evening.)

247 *Advertising Management* (3)
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Not offered 1963–64.)

248 *International Marketing* (3)
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Not offered 1963–64.)

250 *Contract Administration* (3) Lazure
The management of government contracts with private suppliers. (Not offered 1963–64.)

251 *Retail Management* (3)
Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis. (Fall—evening.)

255–56 *Seminar in Foreign Trade* (3) Ogdon
Research, analysis, and discussion of foreign trade institutions, public and private. (Academic year—evening.)

273–74 *Readings in Business* (3–3) The Staff
Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor. (Academic year—evening.)

286 *Management in the Armed Forces* (3) Jessup
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered 1963–64.)

288 *Executive Leadership* (3) Krieger
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations. (Fall—evening.)

291 *Seminar in Business Management* (3) Ericson, Page
Research on various phases of management as practiced in American industry. (Fall and spring—evening.)

293–94 *Business Research* (3–3) The Staff
First half: not offered 1963–64. *Second half:* summer 1963.

296 *Seminar in Controllership* (3)
Research on advanced problems of the controller in all types of business organization and the Federal Government. (Spring—evening.)

297 *Case Studies in Business Administration* (3) Jessup
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. (Fall and spring—evening.)

299 *Thesis Seminar* (3) Dockeray and Staff
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1963.)

300 *Thesis* (3) The Staff
(Fall and spring—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

235 *Financial Management* (3)

253 *Procurement and Distribution* (3)

261 *Seminar in Advanced Management* (3)

263–64 *Business Organization and Management* (3–3)

269 *Readings and Conferences in Controllership* (2 or 3) (Summer 1963)

284 *Readings and Conferences in Management* (2)

290 *Research Seminar in Management* (3)

295 *Research Seminar in Controllership* (3)

HEALTH CARE ADMINISTRATION

THIRD GROUP

202 *Introduction to Health Care Administration* (3) Griffiths
Lecture and discussion (2 hours), laboratory (2 hours). Survey of community health services, public health organizations, voluntary agencies, and private practitioners (with attention to state and national health resources); medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening.)

203–4 *Organization and Management I–II* (3–3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). The history and current character of institutional health care. Organizational functions and structure of various kinds of hospitals and clinics, including long-term-care facilities such as mental hospitals, homes for the aged, nursing homes, and others related to health care administration. (Academic year—day and evening.)

205 *Hospital Management Procedures* (3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). A survey of hospital law; a study of hospital forms, procedures, and systems; hospital programs pertaining to disaster relief, safety, fire prevention; personnel, purchasing, and volunteer services; and the operational peculiarities of hospital departments. Prerequisite: Health Care Administration 203. (Fall—day and evening.)

206 *Case Studies in Health Care Administration* (3) Gibbs
A discussion of general ideas about administration as applied to practical cases. Emphasis is placed on policy making, planning, and controlling in hospitals. Prerequisite: Business and Public Administration 201 and Health Care Administration 203. (Spring—day and evening.)

207 *Management Analysis in Health Care Institutions* (3) Gintzig
Lecture (2 hours), laboratory (2 hours). Methods of collection, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. One day each week is spent in a medical care institution. This time is devoted to an investigation on which written and oral reports are based. Prerequisite: Health Care Administration 203 and 205. (Spring—day and evening.)

209 *Health Care Economics* (3) Griffiths
Lecture (2 hours), laboratory (2 hours). Medical economics including sources of hospital income; fund raising drives; methods of procuring, using, budgeting, and accounting for hospital funds; prepayment plans, impact on community of the cost of medical care. (Spring—day and evening.)

212 *Planning and Construction of Health Care Facilities* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of long and short health care planning, designing, constructing, equipping, and supplying. Prerequisite: Health Care Administration 202, 203. (Spring—day and evening.)

213 *Administration of Health Care Systems* (3) The Staff
The nature and special administrative requirements of federal hospital systems; health care associations at national, regional, and local levels; regional planning; health care plans and counseling activities. (As arranged.)

250 *Administration for Mental Care* (3) The Staff
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, and others. (As arranged.)

260 *Administration for Long-term Care* (3) The Staff
A survey of the medical and nursing procedures designed for administrators of long-term facilities including nursing homes and facilities for the aged. (Fall—evening.)

261 *Business Procedure in Long-term-care Facilities* (3) The Staff
Business procedures with special application to administration of facilities for long-term care including nursing homes and homes for the aged. (Spring—evening.)

262–63 *Readings in Long-term-care Administration* (3–3) The Staff
Advanced studies in selected aspects of administration of long-term-care facilities including nursing homes and homes for the aged and others. (As arranged.)

267 *Social Gerontology for the Administrator* (3) Tibbitts
A survey of information concerning the special characteristics of the elderly with which administrators of long-term-care facilities should be acquainted. (Fall—evening.)

270 *Research in Health Care Administration* (3) The Staff (As arranged.)
Research into an assigned area dealing with Health Care Administration.

285–86 *Readings in Hospital Administration* (3–3) The Staff
Advanced studies in various aspects of community health and hospital administration, and selected aspects of medical care. Admission by permission of the Coordinator. (Academic year—as arranged; summer 1963.)

293–94–95 *Residency I* (3–3–3) Gibbs
The twelve-month residency, beginning June 1 or July 1 of each year, has four major objectives: work experience under a qualified preceptor; periodic seminars with the University staff; periodic written progress reports of work accomplished; and a final written report of a major investigation. (Other courses may be substituted for Health Care Administration 294–95 as appropriate.)

296–97–98 *Residency II* (3–3–3) Gibbs
For selected students who take a second year of residency.

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, by special arrangement, the University offers the following courses for students enrolled in the Health Care Administration programs.

107 *Medical Background Terminology** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A basic course in medical background information, disease classification, and terminology.

108 *Medical Records Processing** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Detailed consideration of methods of processing, preserving, and indexing medical records.

109 *The Medical Records Department** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A study of the Medical Records Department in the hospital. Its characteristics and function.

110 *Preparation and Auditing of Medical Records** (3) The Staff
Lecture (3 hours), laboratory (2 hours). The origin, development, and evolution of the medical record.

111 *Statistical Development and Analysis** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Development and analysis of statistical data required by the hospital for medical record purposes.

* Part of a sequence. Primarily for nondegree students from other countries; but may be offered for academic credit by special arrangement with the Coordinator of the Programs in Health Care Administration.

112–13–14 *Medical Records Internship** (3–3–3) The Staff
Work projects in appropriate hospitals under qualified preceptors and with faculty supervision.

150–51 *Survey of Health Care Organization and Procedures* (3–3) The Staff
Lectures and discussions. (May be audited by students not wishing college credit.) A survey course for students in other fields or from medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term-care facilities such as nursing homes, and homes for the aged. This is a two semester sequence. Students wishing to take the courses for graduate credit must take the laboratory, Health Care Administration 203. Not open to majors in Hospital Administration. (Academic year—evening.)

PUBLIC ADMINISTRATION

THIRD GROUP

211 *Problems of Governmental Organizations* (3) Larson
Analysis of the application of organizational theories and practices to government agencies, with particular emphasis on internal organization and control. Special problem areas are examined, such as decentralization, staff line and field-headquarters relationships, and the role of committees. (Fall—evening; summer 1963.)

213 *Administration in Government* (3) Brown, Cloutier
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripital and centrifugal forces at work. (Fall and spring—evening.)

215 *Seminar in Comparative Administrative Systems* (3)
Examination and analysis of the administrative systems of the major foreign governments with particular attention to practices applicable to administration in the United States. (Fall—evening.)

216 *Administration of International and Supranational Activities* (3 or 6) Jordan
Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in multi-national supported and staffed activities. Prerequisite: Public Administration 215. (Spring—evening.)

221–22 *Staff Functions in Government* (3–3) Brown, Cloutier
Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, security, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services. (Academic year—evening.)

225–26 *Internship in the Administrative Processes* (3–3) Sommers
This course is open only to persons selected by government agencies for participation in approved intern programs. (Academic year—as arranged.)

232 *Federal Personnel Procedures* (3) Torpey
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. (Spring—evening; summer 1963.)

233 *Seminar in Manpower Development and Utilization* (3) Sommers
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems. (Fall—evening.)

* See footnote on page 260.

243 *Local Government Law** (2) Mallison
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Spring—evening.)

244 *Administration in State and Metropolitan Governments* (3)
Examination of public administration at the state and local level. Developments and trends growing out of the changing urban pattern. (Fall—evening.)

251 *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration. (Fall and spring—evening; summer 1963.)

252 *Seminar in Planning and Programming* (3) Jacobus
The administrative processes of planning and programming in government, relationship to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. This course is primarily for students who have completed Public Administration 251. (Fall—evening.)

254 *Controllership in the Federal Services* (3) Krieger
Function of the controller in federal agencies; special problems analyzed; comparison of the controller function in government and business. (Spring—evening.)

259 *Government Procurement and Property Management* (3)
Principles and problems of government procurement; accounting and inventory; storage; development of specifications; property management. (Not offered 1963–64.)

260 *Seminar in Policy Formulation and Administration* (3) Brown
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy. (Fall—evening.)

261 *Public Opinion and the Administrator* (3) Stromsem
Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs; evaluating public relations programs; the importance of timing; use of public opinion measurement techniques. (Not offered 1963–64.)

271 *Reading and Conference Course in Public Management and Administration* (3) The Staff
The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration. (Fall—evening; summer 1963.)

272 *Seminar in Public Personnel Administration* (3) Sommers
The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration. (Spring—as arranged.)

297 *Seminar in Public Administration* (3) Brown and Staff
Advanced research on various phases of public administration including methods of policy formulation and control, the application of systems to management, administration problems of bureaucratic relationships. (Not offered 1963–64.)

298 *Case Studies in Public Administration* (3) Cloutier
(Formerly Public Administration 212)
Analysis and discussion of problems in public management by use of the case method. (Spring—evening.)

299 *Thesis* (3) Larson and Staff (Fal
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1963.) The Staff

300 *Thesis* (3)
(Fall and spring—as arranged; summer 1963.)

* Same as Law 349.

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following public administration courses for students enrolled in the Air Force Advanced Management Program and in Engineering Administration.

213 *Administration in Government* (3) (Summer 1963.)

260 *Seminar in Policy Formulation and Administration* (3)

HISTORY *

Professors E. L. Kayser, Wood Gray, H. M. Merriman, R. H. Davison *(Chairman)*, W. C. Davis, R. B. Thompson
Associate Professor R. C. Haskett
Associate Professorial Lecturers R. P. Multhauf, J. I. Robertson, Jr.
Assistant Professors C. J. Herber, P. P. Hill, R. W. Kenny

Bachelor of Arts with a major in History (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 67, including History 39–40 and 71–72.

Required: the general requirements, pages 73–77, and the grade of "pass" on the History major examination at the end of the senior year.

The major, centered on the study of the rise, development, and spread, and the continuing challenges of Western civilization, is attested by a major examination. Under the guidance of an adviser the student will arrange his program in History to attain a balanced coverage of (1) the rise of civilization in Europe to the eve of the French Revolution, (2) the development of non-Western civilizations and their interaction with the Western world, (3) the historic problems of modern industrial civilization from the beginnings of the Industrial Revolution, and (4) the relations of the major nations of Europe and America in their world setting since the Napoleonic Wars. A six-hour research seminar to give training in fundamental technics is a required part of each major's program, and a proseminar (History 199–200) is offered as a means of integrating the students understanding of the continuity of Western civilization. For details relating to the administration and content of the major, see the pamphlet on this subject, which is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the History Department.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, see page 67.

Required: the general requirements, pages 73–77, and the grade of "pass" on the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes political and social history, economic development, governmental structures and international relations, and the principal literary works and writers of the Latin American republics. The Department of History provides a proseminar (History 197–98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College of Arts and Sciences.

Master of Arts in the field of History.—Prerequisite: the degree of Bachelor of Arts with a major in History from this University, or the equivalent, and the approval of the Department.

Required: the general requirements, pages 78–81. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in

* The Staff of Instruction is for the academic year 1962–63.

third-group history courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Master of Arts in the field of Latin American Civilization.—Prerequisite: the degree of Bachelor of Arts with a major in Latin American Civilization from this University, or the equivalent.

Required: the general requirements, pages 78–81. Course work and the comprehensive examinations will embrace political and social history, governmental structures and international relations, economic development, and principal literary works of Latin America. The thesis may be written in any one of these four fields. All courses must be approved in advance by the Adviser.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in History.—Prerequisite: the Education curriculum, page 69.

Required: the History option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

39–40 *The Development of European Civilization* Kayser, Herber, Kenny (3–3)

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present. (Academic year—day and evening; summer 1963.)

71–72 *The Development of the Civilization of the United States* (3–3) Haskett, Hill

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

105–6 *Introduction to the History of Science* (3–3) Multhauf

First half: the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half:* the main lines of development of astronomy, physics, chemistry, biology, and medicine from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39–40 or a background in science. (Academic year—evening.)

109–10 *Ancient History* (3–3) Kayser

The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Not offered 1963–64.)

111–12 *Medieval History* (3–3) Kayser

The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)

130 *Nationalism* (3) Herber

The historical evolution of modern nationalism. (Summer 1963.)

131–32 *History of Germany* (3–3)

The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1963–64.)

* History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72 to courses 170 through 184; either History 39–40 or 71–72, to courses 161 through 169.

141–42 *History of France* (3–3) Herber
A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)

145–46 *History of Russia* (3–3) Thompson
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860–1881. *Second half:* Revolution and Soviet rule, 1881–1960. (Academic year—evening; summer 1963.)

147 *Economic History of Europe* (3) Gray
A survey from ancient times to the present day. (Not offered 1963–64.)

148 *Oversea Expansion of Europe* (3)
International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the 19th and 20th centuries. (Not offered 1963–64.)

149–50 *European Diplomatic History* (3–3) Davison
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. (*First half:* 1963–64 and alternate years; fall—day. *Second half:* spring—day and evening.)

151–52 *English History* (3–3) Kenny
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half:* to 1689. *Second half:* since 1689. (Academic year—day and evening; summer 1963—History 152 (3).)

161 *Ancient Americans* (3) Davis
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (1964–65 and alternate years.)

162 *Iberian Background of Latin America* (3) Davis
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (1964–65 and alternate years.)

163 *Colonial Latin America* (3)
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—day.)

164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. (Alternate spring and summer terms: summer 1964; spring 1965.)

166 *Mexico and the Caribbean since Independence* (3)
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Alternate spring and summer terms: spring—day; summer 1963.)

170 *American Colonial History* (3) Haskett
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Spring—evening.)

171–72 *Social History of the United States* (3–3) Gray
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time. (Academic year—day; summer 1963—History 171 (3).)

173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Spring—evening; summer 1963.)

174 *Economic History of the United States* (3) Gray
Main trends in the development of American agriculture, industry, and trade since 1607, with their Old World backgrounds and in their world setting. (Fall—day.)

175–76 *Political and Constitutional History of the United States* (3–3) Haskett
First half: to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1963—History 176 (3).)

177 *The South* (3) Robertson
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Spring—day.)

178 *The West* (3)
The role of the frontier in American history. (Not offered 1963–64.)

179 *The Civil War* (3) Robertson
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself; the immediate and long-range effects of the War on American life. (Fall—day.)

181–82 *Diplomatic History of the United States* (3–3) Merriman Hill
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1963—History 182 (3).)

183 *Oversea Expansion of the United States* (3) Merriman
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)

184 *Canada and the United States* (3) Merriman
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (Fall—day.)

187 *History of Modern China* (3) Gasster*
Principally since 1800. Traditional system, impact of the West, rebellion and reform, political and intellectual revolutions of the 20th century. (Fall—day.)

190 *History of India* (3) Thompson
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1963–64.)

191–92 *Current History* (1–1)
Contemporary events in their world setting. (Not offered 1963–64.)

193 *History of the Near East* (3) Davison
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (1964–65 and alternate years.)

195–96 *History of the Far East* (3–3) Thompson
First half: the civilization of China and Japan from the beginnings to 1600. *Second half:* the modern Far East under the impact of the West since 1600. (Academic year—day and evening.)

197–98 *Proseminar in Latin American Civilization* (3–3) Davis, Robb, Sammons
Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the History Major* (3–3) Thompson
Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, in its world setting, including representative selections from the classics of historical literature. (Academic year—evening.)

* Appointment effective September 1963.

THIRD GROUP*

211–12 *Reading Course in Medieval History* (3–3)
Primarily for graduate students. (Not offered 1963–64.)

241–42 *Seminar in Modern European History* (3–3) — Herber
(Academic year—evening.)

243 *Reading Course in Modern European History* (3) — Davison
For graduate students. (Fall—day.)

245–46 *Seminar in Eurasian History* (3–3) — Thompson
(*First half:* not offered 1963–64. *Second half:* spring—day.)

247–48 *Reading Course in Russian History* (3–3) — Thompson
For graduate students. (Academic year—day.)

249 *Seminar in European Diplomatic History* (3) — Davison
(Spring—day.)

251–52 *Seminar in English History* (3–3) — Kenny
(Academic year—evening.)

261–62 *Seminar in Latin American History* (3–3) — Davis
(*First half:* summer 1963. *Second half:* not offered 1963–64.)

271–72 *Seminar in the Social History of the United States* (3–3) — Gray
(Academic year—day.)

273–74 *Reading Course in American Economic and Social History* (3–3) — Gray
For graduate students. (Academic year—evening.)

275–76 *Seminar in American Political and Constitutional History* (3–3) — Haskett
(Academic year—evening.)

277–78 *Reading Course in American Political and Constitutional History* (3–3) — Haskett
For graduate students. (*First half:* 1964–65 and alternate years; fall—day. *Second half:* 1963–64 and alternate years; fall—day.)

281–82 *Seminar in the Diplomatic History of the United States* (3–3) — Merriman
(Academic year—day.)

285–86 *Reading Course in American Diplomatic History* (3–3) — Merriman
For graduate students. (Academic year—evening.)

291–92 *Seminar* (3–3) — The Staff
Prerequisite: approval of the Department. (Academic year—as arranged; summer 1963—History 291 (3).)

294 *Seminar in the History of the Modern Near East* (3) — Davison
(Fall—evening.)

295 *Seminar in the History of the Modern Far East* (3) — Gasster
(Fall—day.)

299–300 *Thesis* (3–3) — The Staff
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1963.)

* Approval of the instructor is required for registration in each third-group course.

HOME ECONOMICS *

Professor Kathryn Towne *(Chairman)*
Associate Professorial Lecturer Mary Osterndorf

Bachelor of Science in Home Economics.—See pages 136–37, 138–39.

FIRST GROUP

1 *Food Selection and Preparation* (3) Towne
Composition, selection, and preparation of food; analysis of recipes; standard products; planning, preparing, serving, and estimating the cost of meals. Material fee, $18. (Not offered 1963–64.)

22 *Clothing: Its Selection, Cost, and Care* (3) Towne
Clothing selections—the economic, aesthetic, and hygienic aspects; the application of the principles of color and design to individual selection; the care of clothing. (Not offered 1963–64.)

51 *Family Meals* (3) Osterndorf
The choice, purchase, preparation, and service of foods; dietary standards, food habits, and the nutritional needs of the family; problems of purchasing, care, and use of food by the consumer. Material fee, $11. (Not offered 1963–64.)

53 *Family Health and Household Sanitation* (3) Towne
Home hygiene and home care of the sick; the principles of household sanitation in relation to health and diseases. (Not offered 1963–64.)

62 *Clothing Construction* (3) Towne
Simplified techniques and unit method of construction suitable for cotton, wool, silk, and man-made fibers; the use of commercial patterns and their alteration; the proper selection of color, design, and fabric. Material fee, $8. (Not offered 1963–64.)

66 *Fabric Decoration* (3) Towne
Lecture (1 hour), laboratory (4 hours). Original pattern and color combinations; application to a variety of hand methods of decorating fabrics for use as clothing, draperies, and upholstering; use of stencils, block and screen printing, and other simple equipment. (Not offered 1963–64.)

71 *Costume Design and Fashion Economics* (3) Towne
Factors determining fashions and effect on cost of clothing, problems of the consumer of textiles and clothing, historic costume and its relation to modern dress. Material fee, $8. (Not offered 1963–64.)

72 *Household Textiles* (3) Towne
Properties, uses, and tests of the different textile fibers and fabrics, and development of judgment and knowledge of standard for the consumer of clothing and house-furnishing material. Material fee, $8. (Fall—day.)

77 *Marketing* (3)
Purchasing of foods as it relates to the home and to the institution. (Not offered 1963–64.)

* The Staff of Instruction is for the academic year 1962–63.

SECOND GROUP

102 *Advanced Food Preparation* (3) Osterndorf
The application of the fundamental processes of food preparation to a wider range of food materials and various services for different occasions. Material fee, $18. (Not offered 1963–64.)

106 *Quantity Cookery* (3)
(Not offered 1963–64.)

123 *Household Finance and Problems of the Consumer* (3) Towne
Economic problems of the family in modern industrial society, family income, income apportionment and household expenditures, laws affecting the home, investments, consumer buying. (Spring—day.)

143 *Advanced Clothing Construction* (3) Towne
Problems of clothing construction and flat pattern designing. Material fee, $8. (Not offered 1963–64.)

148 *Food Problems and Demonstration Methods* (3)
Factors affecting the preparation of standard products from the experimental viewpoint, principles of demonstration. Material fee, $18. (Fall—day.)

152 *Nutrition* (3)
Lecture course on the principles of normal and abnormal human nutrition. Laboratory work on the calculation and preparation of dietaries. Laboratory fee, $8. (Fall—day.)

154 *Diet Therapy* (3)
Study of nutrition as applied to diet and disease. Material fee, $8. (Not offered 1963–64.)

164 *Child Nutrition* (3) Osterndorf
Basic principles and practices in nutrition at infant, pre-school, and adolescent ages. Demonstration of nutritional and special food requirements. (Not offered 1963–64.)

168 *Institutional Management* (3)
Study of the organization, equipment, and marketing problems of institutions. (Not offered 1963–64.)

171 *House Furnishing* (3) Towne
Home planning from the historic, artistic, economic, and sanitary viewpoints; home furnishings such as linens, dishes, floor covering, mattresses, etc. Material fee, $5. (Not offered 1963–64.)

172 *Problems in Home Furnishings* (3) Towne
Lecture (1 hour), laboratory (4 hours). Workshop-type course in home furnishings, including upholstering, slip covering, refinishing furniture, and making draperies. (Not offered 1963–64.)

181 *The Child in the Home* (3)
Care and development of children, parent-child relationships. (Spring—day.)

192 *The Home, Its Management and Equipment* (3) Towne
Economic management of the home; distribution of time and energy; problems in the selection, arrangement, and care of equipment. (Not offered 1963–64.)

193 *Supervision of Home Management* (3) The Staff
Field work under supervision. Designed to meet requirements of those preparing to teach in federally aided schools. (As arranged.)

195–96 *Special Problems* (3–3) The Staff
Individual investigation or study under the guidance of a member of the Staff. (Academic year—day.)

197–98 *Proseminar* (3–3) The Staff
The study of the most recent materials and problems in the various phases of home economics. (Academic year—day.)

*INTERNATIONAL AFFAIRS**

A. M. Woodruff, *Acting Chairman*

Professors J. W. Brewer, H. M. Merriman, R. H. Davison, W. H. Kraus, W. C. Davis, R. B. Thompson, W. E. Schmidt, C. E. Galbreath, W. E. Tayler, K. L. London, J. L. B. Atkinson, H. M. Stout

Professorial Lecturers R. L. Garthoff, Hans Heymann, H. C. Hinton, Lothar Metzl, V. P. Petrov, T. W. Wolfe

Associate Professors Benjamin Nimer, J. N. Mosél, H. R. Ludden, R. S. Jordan, George Stambuk

Assistant Professor J. K. McDonald

Lecturers Bernard Ramundo, C. H. Slayman

Bachelor of Arts in Government or Master of Arts in Government in the field of International Affairs.—See pages 149–52, 157–59, 160–61.

The following courses are offered by the departments of Economics, Geography and Regional Science, History, Political Science, Psychology, and Sociology and Anthropology. For course descriptions see the departmental announcements concerned. The courses are listed here as an indication of the range of elective courses available to students of International Affairs at The George Washington University. Other courses may be approved as electives in individual student programs.

General

Anthropology 161, *Language and Culture* (3)
Anthropology 263, *Culture, Contact, and Change* (3)
Economics 181–82, *International Economics* (3–3)
Economics 246, *Foreign Labor Movements* (3)
Economics 281–82, *International Economics* (3–3)
Economics 284, *United States Foreign Economic Policy* (3)
Economics 290, *Seminar in International Economics* (3)
Geography 52, *World Regions* (3)
Geography 126, *World Economies* (3)
Geography 127, *World Population and Settlement* (3)
Geography 145, *World Cultural Geography* (3)
Geography 146, *World Political Geography* (3)
Geography 211–12, *Reading Course in Economic Geography* (3–3)
Geography 241–42, *Seminar: Place and Culture* (3–3)
Geography 251–52, *Seminar: World Problem Areas* (3–3)
History 181–82, *Diplomatic History of the United States* (3–3)
History 183, *Oversea Expansion of the United States* (3)
History 184, *Canada and the United States* (3)
History 281–82, *Seminar in the Diplomatic History of the United States* (3–3)

* The Staff of Instruction is for the academic year 1962–63.

History 285–86, *Reading Course in American Diplomatic History* (3–3)
Political Science 111, *Introduction to Comparative Government and Politics* (3)
Political Science 112, *Introduction to Comparative Government and Politics* (3)
Political Science 117–18, *Political Theory: the Nature and Growth of Political Thought in the West* (3–3)
Political Science 171, *International Politics* (3)
Political Science 172, *International Organization: the United Nations* (3)
Political Science 181–82, *International Law* (3–3)
Political Science 187–88, *Current Problems in International Politics* (1–1)
Political Science 197, *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3)
Political Science 212, *Seminar: Comparative Government and Politics* (3)
Political Science 213, *Readings in Comparative Government and Politics* (3)
Political Science 217, *Seminar: Topics in Political Theory* (3)
Political Science 220, *Reading Course in Political Theory* (3)
*Political Science 261, *International and United States Foreign Policy* (3)
Political Science 271–72, *Problems in International Politics and Organization* (3–3)
Political Science 273, *Public Opinion and Foreign Policy* (3)
Political Science 274, *Methods and Objectives of Foreign Policy* (3)
Political Science 279, *Reading Course in International Affairs* (3)
Political Science 281–82, *Seminar: International Law and Relations* (3–3)
*Political Science 283, *Topics in International Law* (3)
*Political Science 285, *Diplomacy Since World War II* (3)
Psychology 156, *Psychology of Propaganda and Public Opinion* (3)
Sociology 144, *Mass Communications* (3)
Sociology 226, *Problems of Underdeveloped Areas* (3)
Sociology 241, *Population Problems* (3)

Africa

Geography 155, *Africa* (3)
Political Science 192, *Politics of North and Central Africa* (3)

Far East

Geography 165, *Eastern and Southeastern Asia* (3)
Geography 167, *The Pacific* (3)
Geography 168, *Australia* (3)
History 187, *History of Modern China* (3)
History 190, *History of India* (3)
History 195–96, *History of the Far East* (3–3)

* Offered in off-campus War College programs only.

Political Science 194, *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Political Science 293–94, *Seminar: International Politics and Government in the Pacific Area* (3–3)

Latin America

Economics 185–86, *Economic History and Problems of Latin America* (3–3)
Economics 285–86, *Economic Development of Latin America* (3–3)
Economics 287–88, *Latin America: Trade and Commodity Policy* (3–3)
Geography 161, *Latin America* (3)
History 163, *Colonial Latin America* (3)
History 164, *South America since Independence* (3)
History 166, *Mexico and the Caribbean since Independence* (3)
History 261–62, *Seminar in Latin American History* (3–3)
Political Science 177, *Recent Trends in Latin American Politics and Government* (3)
Political Science 277, *Seminar: Latin American Government* (3)
Political Science 278, *Seminar: Latin American Political Philosophy* (3)

Middle East

Geography 156, *The Middle East* (3)
History 193, *History of the Near East* (3)
History 294, *Seminar in the History of the Modern Near East* (3)
Political Science 191, *Politics of the Middle East* (3)
Political Science 292, *International Politics and Government in the Middle East* (3)

Sino-Soviet

Economics 133, *The Economy of the Soviet Union* (3)
Economics 267, *The Soviet Economy* (3)
Geography 164, *Communist China* (3)
Geography 166, *The Soviet Union* (3)
History 145–46, *History of Russia* (3–3)
History 245–46, *Seminar in Eurasian History* (3–3)
History 295, *Seminar in the History of the Modern Far East* (3)
Political Science 215–16, *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3)
Political Science 227, *Seminar: the East European Satellites* (3)
Political Science 230, *Seminar: Operational Techniques of International Communism* (3)
Political Science 238, *Seminar: Legal Order in the USSR—a Survey of Soviet Law* (3)
Political Science 239, *Seminar: Communist Chinese Constitutional Law* (3)

Political Science 265, *Seminar: Communist Chinese Foreign Policy and Strategy* (3)
Political Science 267, *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)
Political Science 270, *Seminar: Problems of Soviet Political Strategy—Case Studies* (3)
Political Science 288, *Seminar: Communist Military Policy and Strategy* (3)
Political Science 296, *Seminar: the Communist Bloc in Far Eastern International Politics* (3)

Western Europe

Geography 153, *Western Europe* (3)
Geography 154, *The Mediterranean* (3)
History 141–42, *History of France* (3–3)
History 148, *Oversea Expansion of Europe* (3)
History 149–50, *European Diplomatic History* (3–3)
History 241–42, *Seminar in Modern European History* (3–3)
History 249, *Seminar in European Diplomatic History* (3)
Political Science 113, *Political Problems of the British Commonwealth of Nations* (3)
Political Science 178, *International Politics in the Western Hemisphere* (3)

JOURNALISM *

Professor R. P. Schlabach, Jr.† *(Chairman)*
Associate Professor R. C. Willson
Lecturers F. L. Dennis, J. V. Hinkel, Louis Robinson, T. R. Smith, H. L. Coppenbarger, D. W. Gottlieb

Bachelor of Arts with a major in Journalism (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including English 51–52, or 71–72, History 71–72, Political Science 9–10, and Journalism 71–72.
Required:
(1) The general requirements, pages 73–77.
(2) Twenty-four hours of second-group courses in Journalism, as follows: (a) Journalism 111, 196, 198; (b) nine hours chosen from Journalism 121, 133, 137, 144, 151; (c) six hours chosen from Journalism 115, 140, 142, 143, 145.
(3) Twelve hours of second-group courses, chosen in consultation with the major adviser, in one other department of Columbian College of Arts and Sciences. Students selecting science may take courses in more than one department.

* The Staff of Instruction is for the academic year 1962–63.
† On leave of absence fall semester 1962–63.

FIRST GROUP

71–72 *Journalism in American Society* (3–3) Schlabach, Willson
Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; problems of contemporary journalism. (Academic year—day and evening.)

SECOND GROUP

111 *Reporting* (3) Coppenbarger, Schlabach
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. (Fall—day; spring—evening; summer 1963.)

115 *Editing and Make-up* (3) Schlabach
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. (Fall—day; summer 1963.)

121 *Advanced Reporting: Magazine Feature Articles* (3) Willson
Instruction and practice in writing magazine articles, material for which is obtained through independent investigation. (Fall—evening.)

133 *Advanced Reporting: Community News* (3) Gottlieb
Instruction and practice in coverage and writing of local news. (Fall—evening.)

137 *Advanced Reporting: National Affairs* (3) Schlabach
Instruction and practice in coverage and writing of federal government news from the point of view of the press association. (Spring—day.)

140 *Pictorial Journalism* (3) Smith
Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing technique, cropping for effective reproduction. (Spring—evening.)

142 *Retail Newspaper Advertising* (3)
Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods. (Not offered 1963–64.) Willson

143 *Industrial Communications* (3)
An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications, and external house organs. (Spring—day.)

144 *Advanced Reporting: the Arts and Sciences* (3)
Instruction and practice in writing articles for publication in such fields as the arts, business and economics, science, and technology. (Not offered 1963–64.) Hinkel

145 *Principles and Problems of Public Relations* (3)
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—Saturday morning.)

151 *Editorial Writing* (3) (Not offered 1963–64.)
Instruction and practice in writing of editorials on public affairs. Schlabach

196 *Seminar* (3)
For Journalism majors only. Research in areas relating journalism to secondary fields of study. (Spring—as arranged.) Dennis

198 *Law of the Press* (3)
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law

of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—Saturday morning.)

Course Offered in Six-week Education Session

190 *Supervising School Publications* (3) Willson
The role of journalism in society and the secondary school. Basic news writing, copy editing, make-up and law of the press. Editorial, business, and mechanical aspects of scholastic newspaper, magazine, and yearbook publication. (Summer 1963.)

LAW*

Professors W. T. Fryer, C. D. Benson, J. F. Davison, O. S. Colclough, L. S. Merrifield, O. H. Walburn, D. B. Weaver, L. H. Mayo, G. E. Weston, R. M. Cooper, W. T. Mallison, Jr., C. B. Nutting, R. G. Dixon, Jr.†, Robert Kramer *(Chairman)*, A. S. Miller, J. R. Hambrick, Henry Weihofen *(Visiting)*
Adjunct Professor J. W. Jackson
Professorial Lecturers J. A. McIntire, J. L. Edgerton, P. F. Herrick, G. E. Monk, C. J. Zinn, L. J. Harris, L. P. Walsh, E. A. Beard, Murdock Head, G. N. Robillard, G. L. Hart, Jr., Lester Nurick, W. S. Surrey, M. F. Cohen, G. J. Goldsborough
Associate Professors G. A. Ledakis‡, M. H. Freedman, R. C. Nash, Jr., D. C. Green, W. W. Kirkpatrick, S. C. Law, H. G. Manne
Associate Professorial Lecturers P. A. Rose, H. J. Liebesny, T. H. Brown, S. S. Cohen, H. P. Green
Assistant Professors D. E. Seidelson, D. J. Sharpe, J. P. Sullivan, L. A. Schiller
Lecturers W. W. Goodrich, E. A. Potts, G. D. Cary, I. H. Rimel, A. H. Kaplan, Raymond Kellam, Alfred Letzler, Bernard Ramundo
Clerk of the Trial Practice Court J. A. Kendrick
Associate Clerk of the Trial Practice Court D. G. Skinker
Librarian of the Law Library H. Y. Bernard

For the requirements for the degrees of *Bachelor of Laws*, *Master of Laws*, *Master of Comparative Law*, *Master of Comparative Law (American Practice)*, and *Doctor of Juridical Science*, see pages 105–9, 110–11, 111–12.

FIRST YEAR

110 *Constitutional Law* (4) Mayo, Dixon, Miller
Basic principles of American constitutionalism; judicial function in constitutional cases; implementation of doctrines of separation of powers, federalism, limited government; development and exercise of national powers; introduction to civil rights and liberties. (Spring—day and evening.)

115–16 *Contracts I–II* (2–4) Miller, Freedman, Schiller
Legal remedies of contracting parties, including damages in contract and quasi contract, specific performance, reformation, rescission, and remedies in tort; acts creating

* For Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave fall semester 1962–63.
‡ On sabbatical leave spring semester 1962–63.

and terminating contractual rights, including offer and acceptance, mistake, and problems of proof; the function of consideration; conditions; assignments; third-party beneficiaries; the effect of changed circumstances; and protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, and adversary method. (Academic year—day and evening; summer 1963.)

125 *Criminal Law and Procedure* (4) Cooper, Sullivan, D. Green

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. (Fall—day; spring—evening.)

135 *Legal Method and Legal System* (3) Fryer, Benson, Davison, Goldsborough

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards. (Fall and spring—day and evening.)

145 *Personal Property* (2) Fryer, Mallison, Sullivan, Law, Manne

Concepts, meanings of term "possession", methods of acquiring ownership, problems in bailment cases, basic principles of liens and pledges. (Fall and spring—day and evening.)

150 *Real Property* (4) Benson, Walburn, Sullivan

Historical background of the law of estates and conveyancing; types of estates; dower and curtesy; landlord and tenant relationship; concurrent estates; future interests at common law and after the Statute of Uses; the Rule Against Perpetuities; incidents of divided ownership, as waste; natural rights. (Fall—evening; spring—day; summer 1963.)

161–62 *Torts I–II* (3–2) Merrifield, Seidelson, Sharpe, Schiller

Liability for harm to others: intentional misconduct; the law of negligence, including consideration of fault and appropriate distribution to risk-costs as bases of liability; comparison of liability for physical harm with liability for mental and economic harm. (Academic year—day and evening.)

SECOND YEAR

201 *Agency* (2) Cooper, Freedman

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification. (Fall—day and evening; summer 1963.)

202 *Administrative Law* (3) Davison

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. (Spring—day and evening; summer 1963.)

205 *Appellate Practice and Procedure* (2) Freedman

Appellate practice and procedure will be studied through texts; consultation with appellate judges and law clerks and with attorneys who have cases pending on appeal; observation of arguments in the United States Supreme Court and the Court of Appeals for the District of Columbia Circuit; and analysis of records, briefs, and oral arguments in actual and in moot cases. Each student will brief and argue one advanced-level moot case and will prepare one moot court record for use in first-year Case Club. Students taking this course will take only two hours of Trial Practice Court. Admission by permission of the instructor. (Spring—day and evening.)

210 *Business Associations* (4) Kirkpatrick, Manne
Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination. (Fall—day and evening.)

215 *Civil Procedure* (4) Walburn, D. Green, Law
The mechanics of litigation—the rules which govern the process by which the rights and duties studied in substantive law courses are enforced: pleadings, discovery, pre- and post-trial motions, jurisdiction and venue, equity jurisdiction and trial by jury, former adjudication. Emphasis is on the Federal Rules of Civil Procedure but the principles and main problems indigenous to all procedural systems are developed. (Fall—day and evening; summer 1963.)

219 *Commercial and Investment Paper* (3) Ledakis
Bills of exchange, promissory notes, checks, bonds, certificates of stock, and other forms of commercial and investment paper in the context of their business function and legal setting under the common law and uniform laws, including the proposed Uniform Commercial Code. (Fall—day and evening; summer 1963.)

224 *Sales and Sales Financing* (3) Ledakis, Manne
The law relating to the sale and distribution of goods and to the security financing devices utilized in this connection, with particular attention to the effect of existing and proposed uniform laws. (Spring—day and evening.)

230 *Conveyances* (2) Schiller
Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user; zoning and other land controls. (Fall—day and evening; spring—evening; summer 1963.)

235 *Domestic Relations* (2) Potts, Seidelson
Marriage, annulment, and divorce; adoption and custody of children; economic relations. (Fall—evening; spring—day and evening; summer 1963.)

238 *Equity* (2) Sullivan
A correlation of aspects of equity considered in earlier courses, and inquiring into the nature of equity jurisprudence through analysis of selected problems in equity: historical development of equity, including problems of merger of law and equity; use of equity jurisdiction offensively and defensively, including multi-party actions, injunction of executive and legal actions, and equitable abstention; emphasis on the fashioning of equitable remedies. (Spring—day and evening; summer 1963.)

240 *Evidence* (4) Fryer, Sullivan
Preparation and presentation of evidence, including proof of writings; qualification and examination of witnesses with emphasis on impeachment; privilege; opinion testimony; determination of relevancy; demonstrative, experimental, and scientific evidence; application of the hearsay rule. (Spring—day and evening; summer 1963.)

243 *Federal Jurisdiction* (2) Cooper, Freedman
Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts. (Fall—day and evening; summer 1963.)

251 *Insurance* (2) Schiller
A primary risk distributing medium and the rules by which legislative, administrative, and judicial bodies seek to promote its benefits and avert its dangers. Includes insurance marketing, insurable interest, subrogation, transfer of insurance benefits to non-policyholders, coverage and other insurance policy provisions, disposition of claims. (Summer 1963.)

254 *International Law and World Order* (3) Mallison
Traditional content of course in international law presented in context of values and institutions of the world community; formal prescription and effective practice con-

cerning participants in decision-making processes; roles of individuals, international public organizations, political parties, pressure groups, private associations, and national states; analysis of range of available sanctions; the roles and effects of international agreements under the United States Constitution. (Fall—day and evening.)

259 *Labor Law* (3) Merrifield

Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations. (Spring—day and evening.)

265 *Law and Accounting* (2) S. Cohen

Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items on financial statements of corporations; inventory adjustments; corporate transactions, distributions, and capital adjustments. (Spring—evening.)

270 *Legislation* (2) Nutting, Mallison

The legislative process and roles of various participants in the process; operation of the United States Congress and state legislatures, including fact finding, organization, and procedure; problems of statutory interpretation. (Fall—evening; spring—day; summer 1963.)

274 *Taxation—Federal Estate and Gift* (2) Kramer, Hambrick

A survey of the substantive provisions of the federal estate and gift tax laws, including inter vivos transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, the marital deduction and split gifts; tax procedure. (Fall—evening; spring—day.)

279 *Taxation—Federal Income I* (3) Hambrick, Weaver

Survey of substantive provisions of federal income tax, including concept of gross income, provisions affecting taxation of the family and individual transactions, limitations on allowable deductions, sales and dispositions of property, problems of capital gains taxation, and nontaxable exchanges. (Fall—day and evening; summer 1963.)

280 *Taxation—Federal Income II* (2) Hambrick

Survey of substantive provisions of federal income tax with respect to tax accounting, estates and trusts, and partnerships. Prerequisite: Law 279. (Spring—day and evening.)

285–86 *Trusts and Estates I-II* (3–3) Weaver, Law

An integrated view of considerations (other than tax) in noncommercial transfers of wealth at death or during life with emphasis on the drafting of documents best suited to achieve the wishes of the property owner and meet the needs of his family. *First half:* distribution and administration of intestate estates; formal requirements for execution of wills and trusts; revocation and alteration; grounds for contest; limits on testamentary freedom. *Second half:* dispositive provisions in wills and trusts; common problems of construction; future interests questions including class gifts, powers of appointment, and limits imposed by Rule Against Perpetuities, etc.; problems of administration of estates and trusts including allocations to principal or income, investments, powers to manage, sell, etc.; charitable trusts. Supervised practice in drafting is included. Prerequisite to Law 285: Law 150; to Law 286: Law 285. (Academic year—day and evening; summer 1963.)

295 *Unfair Trade Practices* (3) Weston

Unfair trade practices at common law and under statutes; trade-marks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; state sales-below-cost statutes; Robinson-Patman Price Discrimination Act; miscellaneous business practices. (Fall—day and evening; summer 1963.)

THIRD YEAR

302 *Admiralty* (2) **Sharpe**
Sources and characteristics of the maritime law of the United States, jurisdiction of federal and state courts, personal injury and death questions peculiar to seamen and maritime workers, collision, limitation of liability. (Fall—evening.)

307 *Comparative Law* (3) **Davison**
The Civil Law System; general introduction to foreign law as exemplified by Roman Law and the French and German Civil Codes; comparative study of administration of justice and legal institutions. This course deals with delictual and contractual obligations. (Fall—evening.)

309 *Conflict of Laws* (3) **Dixon, Seidelson**
Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, and business associations. (Fall—day and evening; summer 1963.)

311 *Copyright Law* (2) **Cary**
Historical background; formalities and essentials in securing a copyright; subject matter of copyright; remedies; international aspects of copyright under Berne Union, Universal Copyright Convention, and Inter-American Convention; copyright licensing and performing right societies. (Spring—evening.)

313 *Constitutional Interpretations* (2) **Dixon**
Advanced course in constitutional law. The Constitution and constitutional tradition, process of judicial decision making, significance of "due process", current constitutional developments, adequacy of the traditional system of powers and limitations, introduction to comparative constitutional law. (Not offered 1963–64.)

318 *Creditors' Rights* (3) **Kirkpatrick, Law**
Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration. (Spring—day and evening.)

321–22 *Current Decisions* (2–2) **Seidelson**
Required of, and limited to, members of the student staff of the *Law Review*. (RP) (Academic year—day and evening.)

330 *Federal Antitrust Laws* (3) **Weston, Kirkpatrick**
Restraints of trade at common law and under Sherman Antitrust Act of 1890. Federal Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreements, trade associations, exclusive-dealing agreements, tie-in sales, and trade boycotts; patents and copyrights under antitrust laws. (Spring—day and evening; summer 1963.)

335 *Jurisprudence* (2) **Mayo, Kramer**
Basic jurisprudential concepts; the nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, and functional; law and logic; law and justice; the judicial process; legislative, executive, and administrative decision-making; the impact of politics, economics, and scientific advance on legal systems; contemporary trends in jurisprudential thought. (Fall—evening; spring—day.)

339 *Collective Bargaining and Labor Arbitration* (2) **Merrifield**
The collective labor agreement: its content, negotiation, and administration through the grievance procedure and arbitration; problems in the settlement of labor disputes. (Not offered 1963–64.)

341 *Labor Standards and Social Security Legislation* (2) **Merrifield**
Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age. (Fall—evening.)

345 *Legislative Drafting* (2) Zinn
Advanced instruction and practice in legislative drafting. (RP) (Fall—evening.)

349 *Local Government Law* (2) Mallison
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development; responsibility in tort. (Spring—evening.)

359 *Patent Law** (2) Robillard
Origin and nature of patents, patentable subject matter, classes of patents, novelty, utility, invention, patent claims and their interpretation, acts constituting infringement, correction of patents. (Fall—evening; summer 1963.)

360 *Advanced Topics in Patent Law* (2) Harris
Lectures and discussion; licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; the role of patents in business; economic and social functions of patents, trade-marks, and copyrights. Prerequisite: Law 359. (RP) (Spring—evening.)

362 *Patent Office Practice** (2) Rose
United States Patent Office rules and practice; appeal and interference procedure. (Spring—evening.)

365–66 *Patent Trial Practice Court** (2–2) Brown, Rimel
Practice before the United States Court of Customs and Patent Appeals and the federal courts. Prerequisite: forty-two semester hours, including Law 215 and 240. Law 359, which is also required, may be taken concurrently. *Patent Trial Practice Court* may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement. If *Patent Trial Practice Court* is started in the spring semester, Law 240 may be taken concurrently. (Academic year—evening.)

370 *Public Utilities* (2) Fryer, Davison
Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations; judicial review. (Spring—evening.)

376 *Restitution* (2) Sharpe
Quasi-contracts, constructive trusts, rescission, and other legal and equitable remedies for restoring property and money which unjustly enriches others at the expense of volunteers, victims of misappropriation, and parties to mistaken contracts. (Spring—day and evening; summer 1963.)

378 *Security Transactions* (3) D. Green
Suretyship and mortgages: security interests in real and personal property, their creation, transfer, enforcement, and extinguishment; the law of suretyship, especially in the context of accommodation credit and commercial and financial practices. (Fall—day; spring—evening.)

382 *Selected Problems in the Trial of Tort Cases* (2) Goldsborough
For senior and graduate students and young lawyers without experience in the trial of a negligence case. Recent developments in the principal areas of negligence law; an extension of the fundamental concepts of damages and the principal aspects of settling a negligence case; the preparation and trial of a negligence case; the contemporary liability insurance policy and its impact upon tort litigation; the literature of tort law. (Fall—evening.)

385–86 *Trial Practice Court* (2–2) Jackson, Edgerton, Herrick, Monk, Walsh, Beard, Hart, Kendrick, Skinker
Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.

* Patent law students may take Law 359 and Law 365 concurrently in the fall semester and Law 362 and Law 366 concurrently in the spring semester.

To be taken in the senior year. Prerequisite: forty-two semester hours, including Law 215 and 240. If *Trial Practice Court* is started in the spring semester, Law 240 may be taken concurrently. (Academic year—day and evening.)

391 *United Nations Constitutional Law* (2) Mallison
Interpretation of the law of the Charter; structure and process of decision of the United Nations—the peaceful settlement of disputes, collective security, regulation of armaments, regional arrangements, and types of functional cooperation. (Spring—evening.)

GRADUATE COURSES

401 *Administrative Law Seminar* (2) Davison
Group study of specific problems in administrative law. (RP) (Spring—evening.)

408 *Constitutional Law Seminar* (2) Nutting, Dixon
Group study of contemporary problems in constitutional law. (RP) (Spring—evening.)

412 *Use and Control of Atomic Energy and Space Technology* (2) H. Green
Problems resulting from the revolutionary scientific developments of recent years, as exemplified particularly by atomic energy and space activities. The impact of these advanced technologies on the law and the legal institutions established to assure their adequate control in the public interest. Laws relating to atomic energy and space. Provisions of the Atomic Energy Act and the regulations of the Atomic Energy Commission governing civilian uses of atomic energy. Patent, security, and international considerations. (RP) (Spring—evening.)

415 *Administration of Criminal Justice* (2) Nutting
Selected problems in the field such as arrest, police interrogation, electronic interception, discovery, and the relative positions of prosecution and defense in preparing cases. The professional responsibility of lawyers will be emphasized. (Spring—evening.)

420 *Estate Planning Seminar* (2) Weaver
Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements. (RP) (Spring—evening.)

424 *Seminar on Evidence and Trial Practice* (2) Fryer
Consideration of selected problems involving presentation of proof under the more controversial rules of evidence. Emphasis will be placed on important rules and doctrines from the standpoint of the need for a fundamental re-examination of the law, especially as proposed by the Uniform Rules of Evidence. (RP) (Fall—evening.)

426 *Forensic Medicine* (2) Head, Sharpe
Introduction to problems created by the relationships between medicine and the law: a survey of the medical professions; medical education, specialties, ethics, and professional organizations; an outline of hospital organization and facilities; selected studies in the analysis and presentation of medical aspects of legal controversies, as in personal injury litigation, workmen's compensation claims, and disputes over mental capacity, both civil and criminal; the lawyer's role in domestic and international governmental activities in medicine and public health. (Fall—evening.)

428 *Food and Drug Law* (2) Goodrich, Kaplan
A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered. (Spring—evening.)

431 *Government Contracts I* (2) McIntire
A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and

procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims. (Fall—evening.)

McIntire

432 *Government Contracts II* (2)
Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts; attempts at price, cost, or profit control; termination. Prerequisite: Law 431. (RP) (Spring—evening.)

Miller

436 *International Regional Organizations Seminar* (2)
Legal and policy questions involved in American participation in multinational organizations, including General Agreement on Tariff and Trade, Organization for Economic Cooperation and Development, North Atlantic Treaty Organization, and Organization of American States. Concepts of sovereignty and nationalism will be studied. Special attention will be accorded the nascent "Atlantic Community." (RP) (Fall—evening.)

Nurick, Surrey

440 *Legal Aspects of International Business Transactions* (2)
United States law and practice, including current antitrust and tax problems; brief comparison with the British and Civil Law systems; international law, foreign contracts, choice of law; currency considerations; effect of S.E.C. laws and regulations; international trade, including GATT and reciprocal trade arrangements; sources of finance, both United States and foreign, private and public, including international organizations; and selected case studies. In addition to the regular lecturers, there will be guest lecturers in their specialties. Prerequisite: Law 254. (Spring—evening.)

Merrifield

442 *Labor Law Seminar* (2)
Group study of contemporary problems in labor law. (RP) (Fall—evening.)

Liebesny

449 *Law of the Near East* (2)
A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries. (Fall—evening.)

Mallison

455 *Legal Problems in Modern Methods of Warfare* (2)
The contemporary international law of war; legal aspects of modern methods of coercion (economic, political, psychological, and military); regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes. (RP) (Fall—evening.)

Mayo

463 *Problems in Communications Law* (2)
Institutional structure of mass media; continuing adjustment between public interest goals and the competitive economic system; mass communications process and governmental function including lobbying activities; conflict between freedom of speech and of the press and other major community interests such as the right to a fair trial, protection of community moral standards, and national security; public information process; types of control exercised over newspapers, motion pictures, television, and mails by government and by private groups; comprehensive analysis of television industry and its programming operations; concept of public interest in broadcasting; international communications including the function of ITU and the prospective development of communications satellite systems. (RP) (Fall—evening.)

Kellam

465 *Oil and Gas Law and Regulation* (2)
Nature of landowner's and royalty owner's interest; nature of working-interest owners' interest—the lease, its creation, interpretation, and termination; and resolution of conflicts among adjoining landowners and/or working interest owners (correlative rights). Nature and mechanics of regulation of petroleum production and oil imports; federal vs. state regulation; federal regulation of gas—FPC, its jurisdiction and impact; national fuels policy—regulation of end use, conservation of resources, and equitable distribution of market among competing fossil fuels. Unit agreements: practical bases; theory; voluntary and compulsory mechanics; and supervision, enforcement, and judicial review. (Fall—evening.)

466 *Regulation of Securities and Securities Markets* (2) Letzler
A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission. (Fall—evening.)

469 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris
Registration limited to students with at least a *B* average who have taken Law 360 *Advanced Topics in Patent Law* and related courses including, as a rule, *Trade Regulation Seminar*. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

471 *Research in Public Law* (2) The Staff
Registration limited to students with at least a *B* average who have had a seminar or comparable course in field of proposed research. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

473 *Soviet Law* (2) Ramundo
Concept of "socialist legality"; impact of Soviet legal system upon the individual in his relationship with the state and other participants in Soviet society; role of Communist Party in the institutional framework of the Soviet legal system; Soviet philosophy of law; state (constitutional) law including Soviet federalism, governmental apparatus, and rights and obligations of citizenship; criminal law including economic crimes, role of social and public organizations in administration of justice, and concept of "administrative" punishment; property law including land tenure and personal property rights; labor law including the special role of trade unions and labor contracts; civil law including state enterprises as legal entities and the law of torts and contracts; family law; procedural law, civil, criminal, and government arbitration; and international law. (Spring—evening.)

475 *Taxation—Corporate* (2) Hambrick
Analytical study of income tax problems in corporate dividends and distributions in redemption of stock; corporate liquidations; reorganizations, mergers, and acquisitions; recapitalizations; organization and sales of corporate businesses; collapsible corporations; carryovers. Prerequisite: Law 279. (Fall—evening.)

480 *Taxation—Oil and Gas* (2) Hambrick
Application of federal income tax to producing segment of oil and gas industry; common types of interests in producing properties; tax treatment of exploration expenditures; intensive study of problems in the deduction of intangible development and drilling costs; concept of "economic interest"—who is entitled to depletion?; tax distinctions between leasing transactions, sharing transactions, and sales of oil and gas properties and prospects; "ABC" transactions; organizational problems in oil and gas ventures—joint operating agreements, general and liquid partnerships, associations taxable as corporations and pooling arrangements; "carried interests" and other financial arrangements in development of oil and gas properties. Prerequisite: Law 279. (Not offered 1963–64.)

485 *Taxation Seminar* (2) Hambrick
Selected problems in federal income, estate and gift taxation, involving factual analysis and legal research, and the preparation of memoranda of law, legislative drafting or other appropriate disposition. Identical problems or cases will be assigned to small groups for development and disposition. Registration subject to approval of instructor. Prerequisite: Law 274, 279, and 280. (RP) (Spring—evening.)

490 *Income Taxation of Foreign Business and Investment* (2) Hambrick
The provisions and policies of the Federal Income Tax law applicable to foreign income, including considerations affecting the choice of methods of engaging in foreign

business and investment, allocation of income in foreign commerce, credit for foreign taxes, principles and trends of U. S. tax treaties, including "tax sparing." The emphasis of the course is on analytical treatment of existing law and present and proposed tax policy with respect to foreign business and investment. (Fall—evening.) Weston

492 *Trade Regulation Seminar* (2)
Group study of current problems relating to unfair trade practices and federal antitrust laws. (RP) (Spring—evening.)

495 *Urban Redevelopment* (2)
Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation. (Spring—evening.)

LINGUISTICS—GRADUATE STUDY

COMMITTEE ON LINGUISTIC STUDY

J. G. Allee, Jr. *(Chairman)*, W. G. Clubb, P. F. Gallagher, J. C. King, G. E. McSpadden, N. D. Nelson

Columbian College offers an interdepartmental Master of Arts field in Linguistics, which is directed by the Department of Germanic Languages and Literatures and the Department of Romance Languages and Literatures. Interested students should consult the Chairman of the Committee on Linguistic Study and the Chairman of the department concerned.

For information concerning work toward the degree of Doctor of Philosophy, see pages 83–90.

There is no undergraduate major in the field of Linguistics.

The candidate's program will normally be selected from the following courses:

ENGLISH

125 *Introduction to English Linguistics* (3) Allee
223–24 *Old English* (3–3) Allee

GERMANIC LANGUAGES AND LITERATURES

201–2 *Middle High German* (3–3) Legner
205–6 *Gothic* (3–3) Legner
209–10 *Old High German* (3–3) King
213–14 *Old Norse* (3–3) Allee
223–24 *Linguistic Analysis of Modern German* (3–3) King

225–26 *Seminar: Linguistics* (3–3) King, Allee
227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) King

MATHEMATICS

101 *Introduction to Mathematical Logic* (3) Nelson
201–2 *Mathematical Logic* (3–3) Nelson

PSYCHOLOGY

115 *Psychology of Language and Communication* (3) Mosél

ROMANCE LANGUAGES AND LITERATURES

FRENCH

203 *Problems of Pronunciation and Intonation* (3–3) Vignéras
212 *Historical French Grammar* (3) Vignéras
213–14 *Old French* (3–3) Vignéras

SPANISH

203 *Problems of Pronunciation and Intonation* (3) McSpadden
212 *Historical Spanish Grammar* (3) McSpadden
214 *Old Spanish* (3) McSpadden

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) McSpadden
279 *Introduction to Romance Philology and Linguistics* (3) McSpadden

SOCIOLOGY AND ANTHROPOLOGY

ANTHROPOLOGY

161 *Language and Culture* (3) Gallagher
193 *Anthropological Methods* (3) Campbell

MATHEMATICS *

Professors F. E. Johnston, Florence Mears, N. D. Nelson *(Chairman)*, T. P. G. Liverman, N. A. Wiegmann
Professorial Lecturers W. H. Marlow, D. M. Dribin, Thomas Saaty
Associate Professorial Lecturers Joseph Blum, P. A. DeVore
Assistant Professors W. A. Smith, R. Z. Vause, Hewitt Kenyon
Lecturers Mabel Morris, A. J. Ziffer

Bachelor of Arts or *Bachelor of Science with a major in Mathematics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68.
Required: in addition to the general requirements, pages 73–77, twenty-four semester hours of Mathematics of approved second- and third-group courses.

Master of Arts or *Master of Science in the field of Mathematics.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.
Required: the general requirements, pages 78–81.

Master of Arts in the field of Linguistics.—See pages 284–85 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in Mathematics.—Prerequisite: the Education curriculum, page 69.
Required: the Mathematics option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP†

3 *College Algebra* (3) The Staff
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1963.)

6 *Plane Trigonometry* (3) The Staff
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1963.)

9 *General Mathematics I* (3) The Staff
For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1963.)

10 *General Mathematics II* (3) The Staff
An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1963.)

* The Staff of Instruction is for the academic year 1962–63.

† No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

15 *Finite Mathematics I* (3) — The Staff
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening.)

16 *Finite Mathematics II* (3) — The Staff
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening.)

21 *Calculus I* (3) — The Staff
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1963.)

22 *Calculus II* (3) — The Staff
Differentiation and integration of transcendental functions and applications, conics, parametric equations, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1963.)

23 *Calculus III* (3) — The Staff
Vector concepts, improper integrals, solid geometry, partial differentiation and applications. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1963.)

24 *Calculus IV* (3) — The Staff
Multiple integration with application, infinite series, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1963.)

27 *Calculus I and II* (6) — The Staff
The equivalent of Mathematics 21 and 22. (Fall—day.)

28 *Calculus III and IV* (6) — The Staff
The equivalent of Mathematics 23 and 24. (Spring—day.)

SECOND GROUP*

101 *Introduction to Mathematical Logic* (3) — Nelson
Development of propositional and predicate calculi, basic semantic concepts, elementary intuitive set theory, Boolean algebra. Prerequisite: Mathematics 24 or former 31, or Philosophy 121. (Fall—evening.)

102 *Fundamental Concepts of Mathematics* (3) — Nelson
Axiomatic set theory, cardinal and ordinal arithmetic, foundations of the real number system. Prerequisite: Mathematics 101 or permission of the instructor. (Not offered 1963–64.)

106 *Introduction to Topology* (3) — Kenyon
(Spring—evening.)

111 *Mathematics for Engineers and Physicists I* (3) — The Staff
Differential equations, vector analysis, introduction to matrix algebra. (Fall and spring—day and evening; summer 1963.)

112 *Mathematics for Engineers and Physicists II* (3) — The Staff
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or former 132. (Fall and spring—day and evening; summer 1963.)

120 *Introduction to Theory of Numbers* (3) — Vause
(Fall—evening.)

* Mathematics 24 or former 31 is prerequisite to all second-group courses.

122 *Introduction to Abstract Algebra* (3) — The Staff
(Fall—day; spring—evening.)

124 *Introduction to Matrix Theory* (3) — The Staff
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—evening; spring—day; summer 1963.)

126 *Advanced Analytic Geometry* (3)
(Not offered 1963–64.)

134 *Introduction to Boundary Value Problems* (3) — The Staff
Prerequisite: Mathematics 111, or former 132, or 142. (Spring—evening.)

135 *Projective Geometry* (3) — The Staff
(Fall—evening.)

139 *Advanced Calculus I* (3) — The Staff
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. (Fall—evening; spring—day; summer 1963.)

140 *Advanced Calculus II* (3) — The Staff
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139. (Spring—evening.)

141 *Introduction to Infinite Series* (3) — Mears
(Not offered 1963–64.)

142 *Theory of Differential Equations* (3) — The Staff
Prerequisite: Mathematics 139. (Fall—evening.)

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 111 or former 132. (Not offered 1963–64.)

171 *Vector Analysis* (3) — The Staff
(Spring—evening.)

THIRD GROUP

201–2 *Mathematical Logic* (3–3) — Nelson
(*First half:* fall—evening. *Second half:* not offered 1963–64.)

220 *Theory of Numbers* (3) — Vause
(Spring—evening.)

237–38 *Theory of Functions of a Complex Variable* (3–3) — Johnston
A year course: credit is not given for the first half until the second half is completed.
(Academic year—evening.)

242 *Infinite Series* (3) — Mears
(Not offered 1963–64.)

243–44 *Numerical Analysis* (3–3) — Marlow
Prerequisite: Mathematics 111, former 132, or 142. (Academic year—evening.)

249 *Ordinary Differential Equations* (3)
(1964–65 and alternate years.)

250 *Integral Equations* (3) — Liverman
(Not offered 1963–64.)

251–52 *Theory of Functions of a Real Variable* (3–3)
(1964–65 and alternate years.)

255 *Differential Geometry* (3) — Dribin
(Summer 1963.)

256 *Introduction to Algebraic Geometry* (3) — Dribin
(Spring—evening.)

257 *Theory of Groups* (3) — Johnston
(Not offered 1963–64.)

261 *Generalized Functions and Operational Methods* (3) — Liverman
Theory of generalized functions in one variable. Operational calculus of generalized functions. Applications to differential equations and Fourier analysis. Prerequisite: Mathematics 140. (1963–64 and alternate years: fall—evening.)

262 *Advanced Operational Methods* (3) — Liverman
Generalized functions on test spaces of analytic functions. Operational calculus in several variables. Applications to partial differential and convolution equations of applied mathematics. Prerequisite: Mathematics 261. (1963–64 and alternate years: spring—evening.)

265–66 *Modern Algebra* (3–3) — Wiegmann
Fundamental concepts of theory of groups, rings, and fields. Theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains, and groups with operators. (1964–65 and alternate years.)

267 *Topics in Matrix Theory* (3) — Wiegmann
Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 124 and an elementary knowledge of groups, rings, and fields. (Spring—evening.)

268 *Calculus of Variations* (3)
(Not offered 1963–64.)

270 *Tensor Analysis* (3)
(Fall—evening.)

272 *Hilbert Space* (3)
(1964–65 and alternate years.)

277 *Partial Differential Equations* (3)
(1964–65 and alternate years.)

281–82 *Topology* (3–3) — Kenyon
(1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

MEDICINE *

Professors **T. M. Brown *(Chairman)*, M. J. Romansky, L. K. Alpert, J. M. Evans, C. B. Ethridge**

Associate Professors **A. E. Parrish, C. R. Hartman, S. W. Bush, W. R. Felts, Jr., G. A. Kelser, Jr.**

Associate Clinical Professors **Pearl Holly, J. J. Feffer, A. G. Prandoni, Halla Brown, O. R. Farley, D. C. Sun, Janet Travell, T. S. Sappington, J. W. Trenis, Alfred Brigulio, Joseph Ney, Joseph Beinstein, J. J. Rheingold, Irene Tamagna, J. W. Latimer, Jr., Arthur Rosenbaum, E. A. Gombos**

Assistant Professors **M. H. Jacobson, H. H. Orvis, Irene Siu, R. C. Fowler, Ariel Hollinshead *(Research)*, Mary Watt, N. C. Kramer, Juan Calatayud**

Assistant Clinical Professors **T. J. Abernethy, Benjamin Manchester, L. E. Putnam, Elizabeth Hill, J. E. Rall, L. J. Thomas, M. H. Stolar, S. J. N. Sugar, F. S. Bacon, H. D. Ecker, C. W. Jones, C. W. Thompson, E. S. Gladsden, Maurice Mensh, F. J. Murray, E. P. Parker III, M. H. Rosenberg, J. W. DuChez, W. O. Bailey, Jr., Milton Gusack, Jack Kleh, T. A. Gonder, Rashid Massumi, Ruth Benedict, H. M. Silver, H. E. Ticktin, J. P. Nasou, David Horwitz, B. C. Jones, Jr., E. L. Kehoe, R. F. Manegold, W. H. Whitmore, Jr., L. S. Blumenthal, J. P. Mann, Edward Adelson, R. R. Belton**

Associates **Maurice Protas, R. B. Castell, S. T. Gibson, R. B. Miller, Ernest Cotlove, T. J. Kennedy, Jr., Jack Orloff, J. B. Marbury, Louis Ross, F. D. Chapman, L. H. Snyder, R. G. Taylor, J. W. Long, Irvin Kerlan, Virginia Beelar, S. W. Kirstein, J. F. Ambury, R. N. Coale, Israel Kessler, W. D. Brill, Marvin Fuchs, W. J. Weaver, Jr., J. T. Burns, T. L. Hartman, Boris Rabkin, M. H. Rose, C. A. Schulman, L. A. Craig, Jr., A. W. Danish, Adolph Friedman, Alvin Seltzer, S. D. Loube, Alfred Baer, Herbert Abramson, J. H. Pert, John Walsh, C. E. Law, E. L. Rea, Conrad Gossels, H. O. Mott, Bertle Nelson, W. J. Schewe, J. H. Watson, N. H. Rubenstein, D. M. Watkin, G. J. Fisher, W. L. Stone, B. H. Ostrow, C. D. Cooper, S. C. Pascoe, W. R. Ehrmantraut, C. A. Caceres, G. A. Chapman, F. M. Gross, Eleanor Makel, S. A. Babin, Jr., Alice Brigham, Jack Crowell, D. S. Davis, J. H. Epstein, F. K. Harris II, R. F. Dyer, D. M. Tormey**

Instructor **Paul Schlein**

Clinical Instructors **E. H. Bauersfeld, H. C. Bates, Jr., Jeanne Bateman, George Sharpe, William Lewis, M. A. Sislen, C. J. Savarese, Jr., B. R. Cooperman, M. G. Sherer, J. C. Mandes, R. L. Howard, Walter Kurland, E. J. Leonard, R. S. Gordon, Jr., J. W. Roark, G. C. Buchanan, Audrey Connor, H. I. Passes, C. W. Foulke, Margret McCabe, A. A. Lear, O. W. Donnelly, R. S. Poole, H. C. Sadin, S. J. Talpers, G. T. Economos, Irwin Ardam, S. W. Dejter, S. E. Barr, H. A. Moskovitz, J. T. Hagenbucher, G. N. Polis, J. L. Clifford, Daniel Deykin, Catherine Ray, H. G. Rose, Sammye Belcher, Morton Gluck, A. W. McLaurin, R. A. Olsson, Robert Steinmuller, W. F. Morrissey, R. A. Apter, Francis Chucker, H. D. Cohn, F. A. Peck, M. A. Mufson, Gilbert Hurwitz, R. E. Rieselbach, R. S. Wilkinson, W. E. Gallineck, J. C. Kirby, Jr., Leslie Wiener**

* The Staff of Instruction is for the academic year 1962 63.

Special Lecturers A. D. Kistin, Sol Katz, R. W. Berliner, T. H. McGavack, P. D. Comanduras, W. L. Nalls, Roy Hertz, Albert Sjoerdsma, W. H. Crosby, D. S. Fredrickson, Pierre Tulou, J. L. Goddard

236 *Clinical Microscopy* — The Staff
Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, excreta. (Spring—3 hours a week.)

242 *Physical Diagnosis* — The Staff
Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients. (Spring—6 hours a week.)

244 *Introduction to Medicine* — The Staff
Lectures and conferences covering the principles of internal medicine. (Spring—1 hour a week.)

326 *Introduction to Medical Management* — The Staff
Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. D. C. General Hospital.

327 *Clinical Pathological Conferences I* — The Staff
Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared. (Fall—1 hour a week.)

349 *Medical Conferences* — The Staff
D. C. General Hospital. (Fall—6 hours a week.)

421–22 *Clinics* — The Staff
Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. University Hospital. (Six weeks as arranged during academic year.)

423–24 *Inpatient Clerkship in Medicine* — The Staff
University, Mt. Alto, and D. C. General hospitals. (Six weeks as arranged during academic year.)

427–28 *Clinical Pathological Conferences II* — The Staff
Continuation of Medicine 327. (Academic year—1 hour a week.)

429–30 *Clinical Pathological Conferences III* — The Staff
Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. (Academic year—1 hour a week.)

MICROBIOLOGY *

Professors A. M. Griffin, Mary Robbins, R. C. Parlett *(Chairman)*
Associate Professor Rudolph Hugh
Assistant Professors R. C. Wood, Elizabeth O'Hern, Lewis Affronti

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Special Lecturers L. S. Baron, R. C. Cook, F. B. Gordon, Leon Jacobs, M. C. Leikind, W. J. Peeples, G. O. Pierce

Master of Arts or *Master of Science in the field of Microbiology.*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Biology 1–2; Chemistry 11–12, 21, 22, 151–52; Physics 11, 12; Zoology 103–4.

Required: the general requirements, pages 78–81. The thirty semester hours must include (if not presented for admission) Microbiology 112, 249–50, 293–94, 299–300 and Biochemistry 221–22. The remaining courses are to be selected from Microbiology 209, 219–20, 225, 232, 234, and 295–96. The student with much bacteriological background may substitute for credit one or more courses from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoology. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

Doctor of Philosophy (Graduate Council).—See pages 83–90.

112 *General Microbiology* (4) Parlett and Staff

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $16. (Spring—MWF 9:10–12 am.)

209 *Medical Microbiology*† Parlett and Staff

For medical students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and disease of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. (Fall: lecture (4 hours), laboratory (10 hours)—as arranged.)

211 *Medical Bacteriology and Virology*† (7) Parlett, Robbins

A study of the fundamentals of bacteriology and virology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

213 *Parasitology*† (3) O'Hern

A study of the fundamentals of parasitology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $5. (Fall—as arranged.)

215 *Immunology*† (1) Parlett

A study of the fundamentals of immunology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

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* The Staff of Instruction is for the academic year 1962–63.

† The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

217 *Advanced Mycology* (3) — O'Hern
Advanced study of the fungi—emphasizing culturing and determinative techniques. Lectures and laboratory exercises. Prerequisite: Microbiology 112 or 209, and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: fall—as arranged.)

219–20 *Advanced Microbiology* (arr.) — Hugh and Staff
Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Microbiology 112 or 211, 213, and 215; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $16 a semester. (Academic year—as arranged.)

225 *Microbial Chemistry and Physiology* (3) — Wood
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221–22 or the equivalent. A course in general microbiology is recommended. (1963–64 and alternate years: fall—as arranged.)

227 *Microbial Pharmacology* (2) — Wood
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1964–65 and alternate years: spring—as arranged.)

230 *Statistics and Microbiology* (3) — Griffin
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)

232 *Immunological Methods* (3) — Parlett, Affronti
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1964–65 and alternate years: spring—as arranged.)

234 *Virology* (6) — Robbins
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: spring—as arranged.)

249–50 *Introduction to Medical Research** (3–3) — The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

293–94 *Staff Seminar* (1–1) — The Staff
For graduate students. Bi-weekly throughout the year. (Academic year—as arranged.)

295–96 *Research in Microbiology* (arr.) — The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) — The Staff

*An interdepartmental course. The student should register in the department directing his research.

*NEUROLOGY AND NEUROLOGICAL SURGERY**

Professors J. W. Watts *(Chairman)*, Harold Stevens, R. S. Paine
Associate Clinical Professors R. H. Groh, J. M. Williams, J. F. Fazekas
Assistant Clinical Professors J. P. Murphy, H. V. Rizzoli, A. S. Dekaban, Harvey Ammerman, G. J. Hayes, G. M. Swain
Associates G. D. Weickhardt, C. A. Marsan, A. J. Levens
Clinical Instructors M. C. Korengold, J. T. Lord, N. H. Horwitz, Z. W. Sanders, Ntinos Myrianthopoulos, R. H. Robertson, R. A. Mendelsohn, Ruth Jakoby, Virginia Duggins, L. C. McHenry, Jr., A. P. Hustead, R. A. Chase, Kristoff Abraham

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Special Lecturer K. M. Earle

250 *Neurology: Basic* — Stevens and Staff
Methods of studying the form and function of the nervous system are presented in lectures and laboratory demonstrations. The transition between the basic sciences and clinical neurology is stressed and correlated. (Spring—1 hour a week.)

331 *Neurology and Neurological Surgery* — Watts, Stevens
Clinical lectures and demonstrations. (Fall—2 hours a week.)

335–36 *Neurosurgical Conferences* — Watts and Staff
Clinical conferences weekly. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* — Rizzoli, Fazekas, Duggins
Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures.

433–34 *Clinical Neurology* — Groh, Sanders, St.
Neurological inpatient examinations and demonstrations. Six students in rotation. St. Elizabeths Hospital. (Two hours a week for three weeks in rotation as arranged during academic year.)

435–36 *Neurological Surgery (elective)* — The Staff (Academic
Lectures and motion picture demonstrations of neurosurgical problems. year—bi-monthly.)

* The Staff of Instruction is for the academic year 1962-63.

OBSTETRICS AND GYNECOLOGY *

Professors John Parks, R. H. Barter *(Chairman)*
Associate Professor J. G. Sites
Associate Clinical Professors S. M. Dodek, J. A. Dusbabek, C. K. Fraser
Assistant Professor W. P. McKelway
Assistant Clinical Professors J. K. Cromer, Caroline Jackson, T. M. Leonard, W. T. Lady, T. A. Wilson
Associates B. W. Richwine, F. S. Rogers, R. M. Roll, J. W. Pearson, Jr., Shirley Martin, N. J. Price, M. S. Kaufman, M. P. Footer, J. C. Walsh, Donald Walters, J. M. Friedman, L. M. Liverett, Peter Soyster, H. P. Treichler
Clinical Instructors J. R. Epstein, S. H. Shea, A. S. Bright, W. H. Cooper, I. W. Rovner, M. W. Sandmeyer, Jr., N. M. Tart, Elizabeth Crisp, L. W. Davis, R. E. Bieren, A. W. Winshel, Benny Waxman, L. D. Amorosi

254 *Introduction to Obstetrics and Gynecology* — Dodek, Fraser
Lectures and demonstrations on the development and physiology of the female reproductive system and management of normal pregnancy. (Spring—1 hour a week.)

301-2 *Manikin Demonstrations* — Waxman
The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class. D. C. General Hospital. (One hour a week for six weeks in rotation as arranged during academic year.)

337-38 *Obstetrics and Gynecology* — Parks, Barter, Sites, McKelway
Lectures and demonstrations on the principles of obstetrics and gynecology. (Academic year—4 hours a week.)

441-42 *Clinical Obstetrics and Gynecology* — The Staff
Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, observe and participate in the gynecological clinics and operating rooms, attend bi-weekly departmental conferences and daily ward rounds. University and D. C. General hospitals. (Academic year—as arranged.)

OPHTHALMOLOGY *

Professor R. A. Cox *(Chairman)*
Clinical Professor E. A. W. Sheppard
Assistant Professor J. W. McTigue
Assistant Clinical Professor R. W. Wilkinson
Associates W. J. Romejko, W. P. Chalfant, Jr., W. J. G. Davis, R. E. duPrey, Robert Day, M. G. Alper
Clinical Instructors J. H. Lodge, W. B. Glew, J. R. Weimer, J. W. McTigue

352 *Ophthalmology* — The Staff
Lecture course presenting aspects of all the principles of ophthalmology. (Spring—one hour a week for sixteen weeks as arranged.)

447-48 *Clinic* — The Staff
Each student is given individual instruction in ophthalmological diagnosis. (Academic year—as arranged.)

* The Staff of Instruction is for the academic year 1962-63.

OTOLARYNGOLOGY *

Associate Clinical Professor J. J. McFarland, Jr. *(Chairman)*
Assistant Clinical Professors Catherine Birch, J. L. Levine, M. E. Krucoff, R. S. Page, Jr., J. A. Sabri, W. M. Trible
Clinical Instructor B. M. Webb

351 *Otolaryngology* — The Staff
Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. (Spring—1 hour a week for fourteen weeks.)

354 *Bronchoscopy* — The Staff
A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. (Spring—1 hour a week for two weeks.)

355–56 *Clinic* — The Staff
Practical and clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. University Hospital. (One and one-half hours a week in rotation as arranged during academic year.)

PATHOLOGY *

Professors T. M. Peery *(Chairman)*, W. R. Duryee *(Research)*
Clinical Professor D. L. Weiss
Associate Professors F. N. Miller, Jr., William Newman, W. L. Marsh, M. O. Skelton *(Visiting)*
Assistant Professors Lois Platt *(Cytology)*, Alexander Breslow, John Culberson
Assistants Gloria Brennan, Victor Fazekas, German Lasala, James Weaver

SPECIAL STAFF FOR DEMONSTRATIONS

Associate Clinical Professors J. S. Howe, E. F. Geever, R. G. Gottschalk
Assistant Clinical Professors R. E. Palmer, W. F. Enos, Cornelia Hoch-Ligeti, L. W. Fix, L. F. Misanik
Associates L. E. Zimmerman, C. B. Cook
Clinical Instructors D. R. Parkinson, I. D. Godwin

Special Lecturers E. B. Helwig, L. C. Johnson

Bachelor of Science in Medical Technology.—Prerequisite: the Science curriculum, pages 67–68, including Biology 1–2†, Chemistry 11–12, and Microbiology 112.

* The Staff of Instruction is for the academic year 1962-63.
† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

Required: the general requirements, pages 73–78, including Chemistry 21 and 22, and the following second-group courses offered in the University Hospital: Pathology 115–16, 117–18, and 119–20.

Doctor of Philosophy (Graduate Council).—See pages 83–90.

115–16 *Introduction to Medical Science* (1–1) Marsh and Staff

For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)

117–18 *Principles in Medical Technology* (4–4) Marsh and Staff

For students in medical technology at the University Hospital. Theories, principles, and sources of error, of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)

119–20 *Medical Technology Laboratory* (10–10) Marsh and Staff

Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

250–60 *Pathology* Peery, Miller, Breslow, Culberson

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the functional effects of the various pathologic changes and their correlation with symptoms and physical signs. (Fall—9 hours a week; spring—3 hours a week.)

261–62 *Necropsy* The Staff

Students are required to attend and assist in the performance of necropsies at the University Hospital. (Academic year—as arranged.)

263–64 *Demonstrations in Pathology* Special Staff

Gross specimens from several hospitals are demonstrated and discussed. The University hospital laboratories for clinical pathology are visited and their functions are demonstrated. (Academic year—1 hour a week.)

267–68 *Seminars in Pathology* The Staff

Advanced lectures are presented as arranged on special topics in pathology. (Academic year—as arranged.)

270 *Forensic Pathology and Medical Jurisprudence* Miller

Forensic pathology, toxicology, chemistry, and immunology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine. (Spring—1 hour a week.)

281 *Problems in Experimental Cellular Pathology* (1) Durvee

For nonmedical graduate students. Also for a limited number of specially qualified medical students on an elective basis. Cytological and biophysical aspects of cellular function in relation to normal and selected pathological conditions. (Fall—1 hour a week as arranged.)

323–24 *Surgical Pathology I*

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing current surgical specimens. (Academic year—1 hour a week.)

327 *Clinical Pathological Conferences I* The Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are correlated. (Fall—1 hour a week.)

427–28 *Clinical Pathological Conferences II* The Staff

Continuation of Pathology 327. (Academic year—1 hour a week.)

429–30 *Clinical Pathological Conferences III* — The Staff
Conferences are held at the University Hospital. Attendance is required of students during the medical clerkship there. (Academic year—1 hour a week).

492 *Surgical Pathology II* — Newman
A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically. (Spring—1 hour a week.)

493–94 *Pathology Clerkship (elective)* — The Staff
A limited number of students receive individual training in surgical pathology and necropsies in the laboratories of the University Hospital. (Academic year—as arranged.)

PEDIATRICS *

Clinical Professors Margaret Nicholson, W. S. Anderson, R. H. Parrott, L. E. Hoeck, W. A. Howard *(Chairman)*, J. A. Washington, R. S. Lourie
Associate Clinical Professor T. E. Reichelderfer
Assistant Professors S. L. Leikin, Wellington Hung, Artemis Simopoulos
Assistant Clinical Professors Margaret Gutelius, Mabel Grosvenor, Aaron Nimetz, George Maksim, A. B. Coleman, R. E. Martin, William Stark
Associates J. H. Peacock, Jr., Mary Sartwell, C. F. Stiegler, H. G. Clark, Adrian Recinos, Jr., C. R. Webb, A. R. MacPherson, G. J. Cohen, Bennett Olshaker, J. R. Puig
Clinical Instructors H. H. Diamond, R. H. Mitchell, R. O. Warthen, Emile Black, R. H. Anderson, W. G. Preisser, H. T. Yates, Roger Bergstrom, Mary Fox, S. Z. Goldblatt, Hilary Millar, Harold Plotsky, A. J. Modlin, Jean Lockhart, G. W. Daisley, Jr., Gloria Eng, Belinda Straight, Jean Yacoubian, T. H. Anders, Stephen Mourat, Morris Feitel

256 *Pediatrics* — Howard and Staff
Lectures on physiology of the newborn, normal behavior, emotional and physical development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Medical School. (Spring—2 hours a week.)

355 *Pediatrics* — Howard and Staff
Introduction to clinical pediatrics. Lectures, demonstrations, and case presentations designed to familiarize the student with history taking and physical diagnosis in various pathologic states, and stressing pathophysiology and management. (Fall—2 hours a week.)

365 *Pediatric Psychiatry* — Lourie and Staff
Lectures on neuroses of children and adolescents (in cooperation with the Department of Psychiatry). (Fall—as arranged.)

457–58 *Clinical Clerkship* — Howard and Staff
Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students. Children's Hospital. (Nine weeks as arranged during academic year.)

* The Staff of Instruction is for the academic year 1962–63.

459–60 *Outpatient Clinics* — Howard and Staff
Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital. (Academic year—as arranged.)

461–62 *Clinical Pathological Conferences* — Howard and Staff
Clinical and pathological discussion of recent patient history and laboratory data. Medical School. (Academic year—1 hour a week.)

463–64 *Teaching Rounds* — Gutelius and Staff
Discussion of clinical problems of diagnosis and treatment of current patients. Children's Hospital. (Academic year—three times a week.)

467–68 *Clinical Conferences I* — Howard and Staff
Required. Staff and student discussion of current problems in pediatrics with review of recent literature. Children's Hospital. (Academic year—3 hours a week.)

469–70 *Clinical Pediatric Psychiatry* — Lourie and Staff
Clerkship in fourth year including Well Baby Clinic. Group and class conferences. (Academic year—as arranged.)

471–72 *Pediatric Electives* — Howard and Staff
(Academic year—as arranged.)

PHARMACOLOGY*

Professor H. G. Mandel *(Chairman)*
Clinical Professor R. G. Smith
Professorial Lecturer B. B. Brodie
Associate Professor Clarke Davison
Assistant Professors V. H. Cohn, Jr., T. M. Farber, Paul Mazel, Melvin Reich *(Research)*, J. F. Henderson *(Research)*, Elizabeth Tidball *(Research)*, W. P. Weiss *(Research)*

Master of Arts or *Master of Science in the field of Pharmacology.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively. The undergraduate program must include the following courses or the equivalent: Biology 1–2†; Physics 12, 13, 16; Chemistry 11–12, 22, 151–52. One year of calculus and a course in physical chemistry should be included, but these courses may be taken during the work towards the Master's degree. Biochemistry 221–22 and Physiology 137 are recommended as the undergraduate electives if the candidate wishes to complete the work for the Master's degree in one year.

Required: the general requirements, pages 78–81, including Biochemistry 221–22; Physiology 137 or 232; Pharmacology 261, 267–68, 269–70, 299–300. The remaining courses may be selected from Biochemistry 224, 241; Physiology 170, 232, 259; Microbiology 112, 211, 213, 215, 219–20, 225, 227, 230, 234; Pharmacology 249–50, 272, 279–80, 281, 283.

Doctor of Philosophy (Graduate Council).—See pages 83–90.

* The Staff of Instruction is for the academic year 1962–63.

† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

249–50 *Introduction to Medical Research** (3–3) Reich and Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

261 *Pharmacology* (7) Mandel and Staff
Lectures, laboratories, and recitations concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)

267–68 *Pharmacological Research* (3–3) The Staff
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)

269–70 *Pharmacology Seminar* (1–1) Cohn and Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)

272 *Physiological Disposition of Drugs* (3) Cohn, Davison
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1963–64 and alternate years: spring—as arranged.)

279–80 *Special Topics in Pharmacology* (arr.) The Staff
A lecture course dealing with select aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)

281 *Physiological Techniques in Pharmacology* (3) Farber, Mazel, Tidball
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and site of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1963–64 and alternate years: fall—as arranged.)

283 *Biochemical Techniques in Pharmacology* (3) Cohn, Henderson
A lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Prerequisite or concurrent registration: Pharmacology 261. (1964–65 and alternate years: fall—as arranged.)

299–300 *Thesis* (3–3) The Staff
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

* This is an interdepartmental course. The student should register in the department directing his research.

PHARMACY*

Professor R. M. Leonard *(Chairman)*
Associate Professors C. J. Kokoski, S. M. Schwartz, F. D. Cooper, G. G. Lu
Assistant Professor G. G. Koustenis

Special Lecturers W. S. Apple, G. F. Archambault, Karl Bambach, W. P. Briggs, C. J. Carr, E. G. Feldmann, L. E. Kazin, Henry Miller, M. L. Yakowitz

Bachelor of Science in Pharmacy.—Prerequisite: the Pharmacy curriculum, see page 69. The requirements for the degree are stated on pages 131–34.

SECOND GROUP

101 *Introductory Pharmacy* (1) — The Staff
(Formerly Pharmacy 100)
Lecture and field trips. Introduction to pharmacy through the study of professional areas in which pharmacists are employed. Field trips include visits to representative retail and hospital pharmacies, wholesale drug houses, and museums. (Fall—day.)

115 *Pharmaceutical Calculations* (3) — Kokoski
(Formerly Pharmacy 125)
Systems of weights and measures and their application in the practice of pharmacy. (Fall—day.)

121–22 *General Pharmacy* (4–4) — Kokoski, Cooper, Schwartz
Essential pharmaceutical processes; theory and manufacture of pharmacopeial and formulary galenical preparations; pharmaceutical usage of certain classes of substances and preparations. Laboratory fee: Pharmacy 121, $11; Pharmacy 122, $18. (*First half:* fall—lecture (3 hours), laboratory (3 hours)—day. *Second half:* spring—lecture (2 hours), laboratory (6 hours)—day.)

131 *Pharmacognosy* (3) — Leonard
(Formerly Pharmacy 126)
Lecture (2 hours), laboratory (3 hours.) Practices and procedures for the production, preservation, protection, and evaluation of crude drugs; biosynthetic origin of drugs and pharmaceuticals, representative examples, and their value in pharmacy and medicine. Prerequisite: Biology 1–2†; Chemistry 151–52. Laboratory fee, $11. (Fall—day.)

132 *Pharmacognosy* (3) — Leonard
(Formerly Pharmacy 127)
Antibiotics, immunologic agents, allergens, hormones, vitamins, and pesticides. Prerequisite or concurrent registration: Microbiology 112; Physiology 137. (Spring—day.)

141 *Inorganic Pharmaceutical Chemistry* (3) — Schwartz
(Formerly Pharmacy 101)
Lecture (2 hours), laboratory (3 hours). A study of the occurrence, methods of preparation, properties, and uses of the important inorganic chemicals encountered in pharmacy and medicine. Prerequisite: Chemistry 21. Laboratory fee, $11. (Fall—day.)

* The Staff of Instruction is for the academic year 1962–63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

143 *Organic Pharmaceutical Chemistry* (3) Schwartz
(Formerly Pharmacy 110)
A survey of important synthetic and naturally occurring medicinal agents in current use with emphasis on nomenclature, isolation or synthesis, properties, and structure-action relationship. Prerequisite: Chemistry 152. (Fall—day.)

144 *Organic Pharmaceutical Chemistry* (3) Schwartz
(Formerly Pharmacy 111)
Continuation of Pharmacy 143. Prerequisite: Pharmacy 143. (Spring—day.)

145 *Organic Pharmaceutical Chemistry* (1) Schwartz
(Formerly Pharmacy 113)
Laboratory (3 hours). Preparation of selected official organic drugs. Prerequisite: Pharmacy 143. Prerequisite or concurrent registration: Pharmacy 144. Laboratory fee, $11. (Fall and spring—day.)

146 *Physical Pharmacy* (4) Schwartz
(Formerly Pharmacy 112)
Lecture (3 hours), laboratory (3 hours). Physicochemical principles and laws as they apply to pharmaceutical systems and preparations. Prerequisite: Pharmacy 141 and 143; concurrent registration: Pharmacy 144. Laboratory fee, $11. (Spring—day.)

148 *Quantitative Pharmaceutical Analysis* (3) Schwartz
(Formerly Pharmacy 174)
Lecture (1 hour), laboratory (6 hours). Drug analysis. Prerequisite: Chemistry 22. Laboratory fee, $18. (Spring—day.)

151 *Pharmacy Accounting* (3) Koustenis
(Formerly Pharmacy 107)
The financial records required in the operation of a pharmacy. (Fall—day.)

154 *Pharmacy Management* (3) Koustenis
(Formerly Pharmacy 178)
Policies and operations relating to the management of pharmacy. (Spring—day.)

161 *First Aid* (1) The Staff
(Formerly Pharmacy 109)
Standard course in first aid methods and practice. (Fall—day.)

165–66 *Pharmacology* (4–4) Lu
Drugs acting on the autonomic, central, and somatic nervous systems; cardiovascular, hematopoietic, genitourinary, endocrine, and digestive systems; histamine and anti-histiminics; anti-infective agents; miscellaneous drugs; and their major clinical modifications or therapeutic uses. Prerequisite: Biology 2*; Physiology 137 and 160 or 170; Microbiology 112; Biochemistry 221–22. Pharmacy 166: laboratory fee, $18. (*First half:* fall—lecture (4 hours)—day. *Second half:* spring—lecture (3 hours), laboratory (4 hours)—day.)

167–68 *Advanced Pharmacology* (arr.) Lu
Laboratory work in pharmacological technique. Prerequisite or concurrent registration: Pharmacy 165. Laboratory fee, $18 a semester. (Fall and spring—day.)

171 *History of Pharmacy* (3) Hamarneh†
(Formerly Pharmacy 115)
Historical development of the profession, including the literature, from ancient times to the present. (Fall—day.)

176 *Pharmaceutical Law* (3) Frailey
The study of laws regulating the practice of pharmacy. (Spring—day.)

* Offered by the Department of Zoology.
† Appointment effective September 1963.

181 *Dispensing Pharmacy* (4) **Kokoski, Koustenis**
(Formerly Pharmacy 102)
Lecture (2 hours), laboratory (6 hours). Compounding of typical prescriptions and a study of incompatibilities. Prerequisite: Pharmacy 122, 143, 144. Laboratory fee, $18. (Fall—day.)

182 *Dispensing Pharmacy* (4) **Kokoski, Koustenis**
(Formerly Pharmacy 103)
Lecture (2 hours), laboratory (6 hours). Continuation of Pharmacy 181. Laboratory fee, $18. (Spring—day.)

184 *Special Problems in Pharmacy* (arr.) Kokoski, Schwartz
Directed laboratory and library research on special problems in pharmacy and pharmaceutical chemistry. For selected undergraduate students. Prerequisite: Pharmacy 143 and 181. Fees to be arranged. (Fall and spring—as arranged.)

186 *Advanced Dispensing Pharmacy* (3) **Kokoski**
(Formerly Pharmacy 172)
The study of special problems in dispensing pharmacy. Prerequisite: Pharmacy 182. Laboratory fee, $18. (Spring—day.)

188 *Survey of Pharmacy* (1) Leonard and Staff
A symposium covering the various phases of pharmacy. (Spring—day.)

190 *Hospital Pharmacy* (1) **Cooper**
Organization and functions of hospitals; organization and operation of a hospital pharmacy; professional and sickroom supplies. Prerequisite: Pharmacy 181. (Spring—day.)

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper and Staff
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 181. (Fall and spring—as arranged; summer 1963.)

194 *Manufacturing Pharmacy* (3) **Cooper and Staff**
Lecture (1 hour), laboratory (6 hours). The manufacture of bulk pharmaceuticals in the University Hospital Pharmacy. (Fall and spring—as arranged.)

PHILOSOPHY *

Professor C. E. Gauss *(Chairman)*
Associate Professor R. H. Schlagel†
Associate Professorial Lecturer C. H. Pfuntner

Bachelor of Arts with a major in Philosophy (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 67.
Required: in addition to the general requirements, pages 73–77, the grade of "pass" for the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is schematized under the following two general headings: (1) methodology and theory of knowledge and (2) the history of ideas and social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199–200) intended to assist the student in preparing for the major examination.

Master of Arts in the field of Philosophy.—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this Univer-

* The staff of Instruction is for the academic year 1962-63
† On sabbatical leave 1962–63.

sity's major examination in Philosophy; the following specific courses or the equivalent: Philosophy 111–12, 113, 121–22, and 131.

Required: the general requirements, pages 78–81. As much as possible of the required course work must be in third-group courses. Where second-group courses are elected students will be required to do more intensive and extensive work than undergraduates. A general written examination in two areas of Philosophy and an oral examination in the student's special field will be required in addition to a Master's thesis of substantial length.

FIRST GROUP

51–52 *Introduction to Philosophy* (3–3) The Staff

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1963—Philosophy 51 (3).)

SECOND GROUP

111–12 *History of Philosophy* (3–3) Pfuntner

The history of western philosophy from early Greece to Kant, seen as the development and modification of the Hellenic cultural pattern. (Academic year—day; summer 1963—Philosophy 111 (3).)

113 *History of Nineteenth and Twentieth Century Philosophy* (3) Pfuntner

European philosophy from the time of Kant. "Isms" and ideologies at the root of contemporary thought. (Fall—evening.)

121–22 *Logic and Scientific Method* (3–3) Pfuntner

First half: the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability. (Academic year—evening; summer 1963—Philosophy 121 (3).)

131 *Ethics* (3) Schlagel

A critical examination of traditional ethical theories from Plato to Ayer. Consideration of the theoretical problems of ethics: the meaning of "good", the nature of ethical judgment, the justification of ethical standards. The course aims at enabling the student to develop his own ethical view as a consequence of his greater understanding of moral phenomena. (Fall—day.)

142 *Philosophies Men Live by* (3) Schlagel

Critique of the tenets, methodologies, and presuppositions of current, vital philosophical orientations: Existentialism, Positivism, Pragmatic Naturalism, Theism, Linguistic Analysis. A critique of reason and faith, and the nonrational aspects of man as guiding influences in life. (Spring—day).

151 *The Philosophy of Science* (3) Schlagel

Brief history of modern science; problems of the meaning of causality, the justification of induction, theories of probability; the nature of scientific explanation and the status of inferred entities; the nature of a mathematical system. Consideration of the philosophic import of certain scientific theories such as Einstein's theory of relativity, Heisenberg's principle of indeterminacy, and Bohr's principle of complementarity. (Fall—day.)

152 *Epistemology* (3) Schlagel

The meaning and criteria of truth; the meaning and cognitive significance of common sense, scientific, and religious propositions or beliefs. Study of problems related to

perception, verification, universals, *a priori* and *a posteriori* knowledge, the concept of mind. (Spring—day.)

162 *Aesthetics* (3) Gauss
The nature of aesthetic experience, problems of appreciation and judgment in the arts, and of the theories and process of artistic creation. Emphasis on contemporary arts and criticism. (Spring—day.)

172 *American Philosophy* (3) Pfuntner
The philosophies of Peirce, Royce, James, Dewey, and Santayana as representative of American thought. (Spring—evening.)

180 *Philosophy of History* (3) Gauss
Problems of historical knowledge and explanation. Critique of philosophies of history. (Not offered 1963–64.)

193 *Topics in Contemporary Philosophy* (3) Gauss
Intensive study of one selected topic: topic for 1963–64: philosophy in contemporary literature. (Fall—day.)

199–200 *Proseminar: Readings for the Major* (3–3) The Staff
Conferences and group discussions in preparation for field-of-study major examination. (Academic year—as arranged.)

THIRD GROUP

201–2 *Readings and Research* (3–3) The Staff
Advanced readings and reports. Investigation of special problems. (Academic year—as arranged.)

211 *Seminar in Plato* (3) Gauss
Intensive study of Plato's later dialogues. (Not offered 1963–64.)

212 *Seminar in Aristotle* (3) Schlagel
Aristotle's logic, metaphysics, and philosophy of science. The development of Naturalism. (Spring—evening.)

216 *Seminar in Kant* (3) Schlagel
A study of one of Kant's Critiques. (Not offered 1963–64.)

262 *Seminar in Aesthetics* (3) Gauss
Intensive study in selected problems. (Fall—evening.)

299–300 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)

Mathematics 101, *Introduction to Mathematical Logic* (3)

PHYSICAL EDUCATION FOR MEN *

Professors W. H. Myers, J. H. Krupa *(Chairman)*, R. G. Hanken, V. J. DeAngelis
Associate Professorial Lecturer W. D. Thompson
Lecturer Pat Abernethy

Associates W. J. Reinhart, J. V. Camp

This department includes all the recognized athletic activities of the men students of the University.

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all men for graduation, except those students exempt under the regulations stated on page 66.

Upon entering the University, all freshmen or other undergraduate students who have not fulfilled the Physical Education requirements are given a medical examination. Assignments for medical examinations will be given at the time of registration. The students who satisfy the requirements of the medical examination are then given a physical efficiency test in the general body skills of agility, endurance, and strength; and in swimming. If the physical efficiency test is passed, the student may elect from the following list of activities:

Setting-up Exercises (stretching exercises)
Body Building Exercises (gymnastic apparatus and weight training skills)
Competitive games and sports
Swimming (beginner, intermediate, advanced, life saving)

If the physical efficiency test is not passed, the student will be assigned to a class for training in the above activities in the order listed.

The Department furnishes gymnasium uniforms and personal equipment upon receipt of a small payment.

Bachelor of Science in Physical Education.—Prerequisite: the Physical Education for Men curriculum, page 70. The requirements for the degree are stated on pages 139–40.

Bachelor of Arts in Education with (1) a major in secondary education combined with a teaching field in Physical Education and *(2) a major in elementary education with an area of specialization in Physical Education*, see the School of Education Catalogue.

FIRST GROUP

1–2 *Freshman Physical Education* (1–1) The Staff
Two periods of supervised activity a week. Physical Education fee†, $4.50 a semester. (Academic year—as arranged.)

11–12 *Sophomore Physical Education* (1–1) The Staff
Two periods of supervised activity a week. Physical Education fee†, $4.50 a semester. (Academic year—as arranged.)

41 *Personal Health* (1) Krupa
Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring—day.)

* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

The Staff of Instruction is for the academic year 1962-63.

† The Physical Education fee is required for registration in one or more of the activity courses.

43–44 *Techniques of Physical Education Motor Activities* (2–2) DeAngelis, Krupa
Fundamental skills, rules, and organization. Physical Education fee*, $4.50 a semester. (Academic year—day.)

45–46 *Teaching Individual and Dual Sports in Secondary Schools* (2–2) Hanken, Krupa
Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee*, $4.50 a semester. (Academic year—day.)

47 *Introduction to Physical Education* (2) Myers
An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Fall—day.)

48 *Introduction to Recreation* (2) Hanken
The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. (Spring—day.)

49 *Human Anatomy* (3)
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2†. (Fall—day.)

50 *Kinesiology* (3) Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

78 *First Aid and Care of Athletic Injuries* (2) DeAngelis
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2†. (Spring—day.)

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Burtner, Snodgrass
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. (Fall—day; spring—evening.)

105 *History and Principles of Physical Education* (3) Myers
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

105–6 *Adapted Physical Education and Physical Examinations* (2–3) Lawrence
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Academic year—day.)

107 *Teaching Recreational Dance* (1 to 2) Burtner, Criddle
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Physical Education fee*, $4.50. (Fall—day.)

109 10 *Leadership Organization in the Intramural Program* (2–2) DeAngelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. (Academic year—day.)

* The Physical Education fee is required for registration in one or more of the activity courses.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

113–14 *Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) Hanken and Staff

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee*, $4.50 a semester. (Academic year—day.)

115–16 *Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) DeAngelis, Hanken

Football, basketball, baseball, track and field. Physical Education fee*, $4.50 a semester. (Academic year—day.)

117 *Teaching Modern Dance* (1 to 2) Burtner

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee*, $4.50. (1964–65 and alternate years: fall—day.)

118 *Dance Production* (1 to 2) Burtner

Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee*, $4.50. (1964–65 and alternate years: spring—day.)

121 *School and Community Health Programs* (3) Krupa

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2†. (Fall—evening.)

122 *Methods and Materials for Health Education* (3) Krupa

Methods and materials for teaching health. Prerequisite: Biology 1–2†. (Spring—evening.)

131 *Tests and Measurements in Physical Education* (3) Snodgrass

Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

132 *Camp Leadership* (1 to 2) Burtner

Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)

136 *Survey of Dance History and Dance Forms* (3) Krupa

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. (1963–64 and alternate years: spring—as arranged.)

138 *Organization and Administration of Physical Education* (3) Abernethy

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Thompson

Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1963–64 and alternate years: academic year—evening.)

161 *Community Organization for Recreation* (3) Thompson

Resources, principles, and methods in organizing community recreation services. (1964–65 and alternate years: fall—evening.)

162 *Administration of Community Recreation Programs* (3) Thompson

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1964–65 and alternate years: spring—evening.)

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* The Physical Education fee is required for registration in one or more of the activity courses.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

PHYSICAL EDUCATION FOR WOMEN *

Professors Helen Lawrence, Elizabeth Burtner
Associate Professor Loretta Stallings *(Chairman)*
Associate Professorial Lecturer W. D. Thompson
Assistant Professors Lyndale George, Jeanne Snodgrass, Connie Vaughan
Lecturer Pat Abernethy
Instructors Donna Abbey, Kathleen Criddle
Associate Mabel McEwan

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all women for graduation, except students exempt under regulations stated on page 66. In the fall a medical and physical examination is given each student for the purpose of discovering individual needs. Those students whose examinations indicate the desirability of remedial or restricted activity are assigned to a program especially adapted to their needs. This limited program includes moderate sports and individual exercises in small groups under careful supervision.

The required costume for Physical Education classes may be purchased at the University Book Store.

Bachelor of Science in Physical Education.—Prerequisite: the Physical Education for Women curriculum, page 70. The requirements for the degree are stated on page 140.

Within the curriculum leading to the degree of Bachelor of Science in Physical Education there is opportunity for specializing in dance, correctives, or recreation.

Bachelor of Arts in Education with (1) a major in secondary education combined with a minor teaching field in Physical Education and *(2) a major in elementary education with an area of specialization in Physical Education*, see the School of Education Catalogue.

FIRST GROUP

1–2 *Freshman Physical Education* (1–1) — The Staff

One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each semester.

Fundamentals of physical education: study of the factors involved in the general maintenance of health, efficient use of the body, and fundamentals of movement.

Activities: badminton, basketball, body mechanics, field hockey, recreational dance, golf, fencing, modern dance, skating, swimming, synchronized swimming, tennis, softball, lifesaving. Physical Education fee†, $4.50 a semester. (Academic year—day.)

11–12 *Sophomore Physical Education* (1–1) — The Staff

Two periods a week chosen from the activities offered each semester as listed under Physical Education 1–2. Physical Education fee†, $4.50 a semester. (Academic year—day.)

43–44 *Techniques of Physical Education Motor Activities* (2 to 3–2 to 3) — The Staff

Fundamental skills, rules, and organization. Physical Education fee†, $4.50 a semester. (Academic year—as arranged.)

* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

The Staff of Instruction is for the academic year 1962–63.

† The Physical Education fee is required for registration in one or more of the activity courses.

49 *Human Anatomy* (3)
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2†. (Fall—day.)

Lawrence

50 *Kinesiology* (3)
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

The Staff

51–52 *Teaching Physical Education Activities* (2 to 3–2 to 3)
Team sports: basketball, hockey, softball, soccer, speedball. Individual and dual sports: tennis, badminton, archery, swimming and diving, lifesaving and water safety. Gymnastics: tumbling, apparatus and trampoline. Physical Education fee*, $4.50 a semester. (1963–64 and alternate years: academic year—day.)

DeAngelis

58 *First Aid and Care of Athletic Injuries* (2)
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2†. (Spring—day.)

SECOND GROUP

Burtner, Snodgrass

101 *Physical Education in the Elementary School* (3)
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, self-testing activities, and body mechanics. (Fall—day; spring—evening.)

Myers

103 *History and Principles of Physical Education* (3)
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

Lawrence

105–6 *Adapted Physical Education and Physical Examinations* (3–3)
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Academic year—day.)

Burtner, Criddle

107 *Teaching Recreational Dance* (1 to 2)
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Physical Education fee*, $4.50. (Fall—day.)

The Staff

111–12 *Teaching Physical Education Activities* (2–2)
Continuation of methods and materials in activities listed under Physical Education 51–52. Physical Education fee*, $4.50 a semester. (1964–65 and alternate years: academic year—day.)

The Staff

113–14 *Practice in Teaching Physical Education Activities* (2 to 4–2 to 4)
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee*, $4.50 a semester. (Academic year—as arranged.)

Burtner

117 *Teaching Modern Dance* (1 to 2)
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance includ

* The Physical Education fee is required for registration in one or more of the activity courses. Students may register in either department.
† An interdepartmental course offered by the departments of Botany and Zoology.

ing instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee*, $4.50. (1964–65 and alternate years: fall—day.)

118 *Dance Production* (1 to 2) Burtner
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee*, $4.50. (1964–65 and alternate years: spring—day.)

121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2†. (Fall—evening.)

122 *Methods and Materials for Health Education* (3)
Methods and materials for teaching health. Prerequisite: Biology 1–2†. (Spring—evening.)

131 *Tests and Measurements in Physical Education* (3) Krupa
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

132 *Camp Leadership* (1 to 2) Snodgrass
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)

136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. (1963–64 and alternate years: spring—as arranged.)

138 *Organization and Administration of Physical Education* (3) George
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—as arranged.)

151–52 *Recreational Leadership Activities* (3–3) Abernethy
Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1963–64 and alternate years: academic year—evening.)

161 *Community Organization for Recreation* (3) Thompson
Resources, principles, and methods in organizing community recreation services. (1964–65 and alternate years: fall—evening.)

162 *Administration of Community Recreation Programs* (3) Thompson
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1964–65 and alternate years: spring—evening.)

* The Physical Education fee is required for registration in one or more of the activity courses.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

PHYSICAL MEDICINE AND REHABILITATION*

Professor C. S. Wise *(Chairman)*
Assistant Professor John Watt, Jr.
Assistant Clinical Professors P. A. Klieger, Giuseppe Balsamo
Associates A. B. C. Knudson, F. L. Wenger

150 *Elements of Physical Medicine* — The Staff
In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability. (Spring—as arranged.)

352 *Advanced Physical Medicine* — The Staff
Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties. (Spring—1 hour a week.)

467–68 *Clinical Studies (elective)* — The Staff
Clinical teaching and demonstration at the University Hospital. (Academic year—as arranged.)

485 *Research* (arr.) — The Staff
Open to medical students and qualified nonmedical students. (Fall—as arranged.)

PHYSICS*

Professors G. M. Koehl, Herbert Jehle
Associate Professors H. H. Hobbs *(Chairman)*, Otto Bergmann
Associate Professorial Lecturers H. H. Landon, Jr., Herbert Rabin
Assistant Professors S. S. Yeandle, Jr., Margaret Montzka, S. P. Bjorklund
Lecturers J. N. Tevis, DeWitt Fisher, J. M. Harrison, K. F. Oerlein, W. J. Condell, Jr., J. E. Tompkins
Instructor R. M. Shirven

Bachelor of Arts or *Bachelor of Science with a major in Physics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68, including Physics 11, 12, 13, 16; or 11, 14, 15, 16; Chemistry 21; Mathematics 21, 22, 23, and 24 (or former 29, 30, and 31).

Required, both for the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements, pages 73–77, including Mathematics 112 and Physics 101, 103, 106, 113, 102 or 114, and 153, 155, or 156, plus *one* of the following: Physics 118, 123, and 132.

Master of Arts or *Master of Science in the field of Physics.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Physics at this University, or the equivalent.

Required: the general requirements, pages 78–81, including Mathematics 171 (if not taken earlier) and Physics 201, 202, 219, 255 or 256, and 291–92.

* The Staff of Instruction is for the academic year 1962–63.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with a teaching field in Physics.—Prerequisite: the Education curriculum, page 69.
Required: the physics option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

For a one-year course offering an introduction to the methods and achievements of physical science, see Chemistry 3–4, page 204.

11 *Introductory Physics* (3) Koehl and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours.) An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introdution to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. (Fall and spring—day and evening; summer 1963.)

12 *Introductory Physics* (3) Koehl and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Material fee, $11. (Spring—day and evening; summer 1963.)

13 *Introductory Physics* (3) Harrison and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Elementary electricity and magnetism. Prerequisite: Physics 11. Material fee, $11. (Fall—day and evening; summer 1963.)

14 *General Physics* (3) Yeandle and Staff
Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11, Mathematics 21 (or former 29). Material fee, $11. (Spring—day and evening.)

15 *General Physics* (3) Bjorklund and Staff
Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Electricity and magnetism. Prerequisite: Physics 14, Mathematics 22 (or former 30). Material fee, $11. (Fall—day and evening.)

16 *General Physics* (3) Hobbs
Lecture (2 hours), conference (1 hour). Modern physics, structure of the atom. Prerequisite: Physics 13 or 15, Mathematics 22 (or former 30) and consent of the instructor. (Spring—day and evening.)

SECOND GROUP

101 *Mechanics* (3) Jehle
Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 12 or 14, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—day; 1964–65 and alternate years: fall—evening.)

102 *Heat and Thermodynamics* (3) Yeandle
Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

105 *Principles of Electricity* (3)
Elementary d-c and a-c circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

Koehl

106 *Optics* (3)
Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day.)

Bergmann

113 *Atomic Physics* (3)
Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 16, 101 or 105, or the equivalent, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

Jehle

114 *Statistical Physics* (3)
Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 16, Mathematics 24 (or former 31), permission of the instructor. (Spring—evening.)

Hobbs

116 *Quantum and Solid State Physics* (3)
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111. (Spring—day and evening.)

Rabin

118 *Introduction to Solid State Physics* (3)
Dielectric and magnetic properties of solids, electron theory of metals, semi-conductors, dislocations, and plastic flow. Prerequisite: Physics 113. (Spring—evening.)

The Staff

123 *Nuclear Physics* (3)
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. Prerequisite: Physics 113. (Spring—evening.)

128 *Sound* (3)
Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Not offered 1963–64.)

132 *Electronics* (3)
Lecture (2 hours), laboratory (3 hours). The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 16 and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11. (Not offered 1963–64.)

Hobbs

153 *Advanced Laboratory in Atomic Physics* (3)
Prerequisite: Physics 16. Material fee, $11. (Spring: Saturday—as arranged.)

155 *Advanced Laboratory in Electricity and Magnetism* (3)
Prerequisite: Physics 105. Material fee, $11. (Not offered 1963–64.)

Hobbs

156 *Advanced Laboratory in Optics* (3)
Prerequisite: Physics 106. Material fee, $11. (Not offered 1963–64.)

Yeandle

181 *Biophysics* (3)
Molecular basis of biophysics, biosynthesis, and reproduction. Molecular and genetic aspects of the effects of radiation. Physiochemical equilibria, steady states, and transients in biological systems; order, disorder, and information theory. Admission by permission of the instructor. (Spring—evening.)

Landon

191 *Nuclear Reactors* (3)
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

THIRD GROUP

201 *Classical Physical Theory* (3) Bjorklund
Classical nonrelativistic and relativistic field theories. Prerequisite: Physics 101 and 165; Mathematics 112, 171. (Mathematics 171 may be taken concurrently.) (Fall—evening.)

202 *Classical Physical Theory* (3) Bjorklund
Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 112, 171. (Spring—evening.)

203–4 *Principles of Modern Physics* (3–3) Bergmann
A critical survey of fundamental topics of modern physics including the theory of relativity, thermal radiation and quantum theory, atomic structure and spectra, wave mechanics, interactions present in multielectron atoms, X-ray, the nucleus, properties of matter in bulk. (Academic year—evening.)

218 *Solid State Physics* (3) Hobbs
Tensor properties of crystals. Application of quantum mechanics to problems in solid state physics. (Spring—evening.)

219–20 *Quantum Mechanics* (3–3) Jehle
Criticism of classical ideas of mechanics and a formulation of quantum mechanical equations; matrix mechanics and its relation to quantum mechanics; application to various problems of atomic, molecular, and nuclear physics. Prerequisite: Physics 113, 201, 202. (Academic year—evening.)

221 *Quantum Electrodynamics and Field Theories* (3) Jehle
Variation principles. Relativistic wave equations, quantization of fields, interaction between fields. Scattering theory. S matrix and causality. Prerequisite: Physics 219–20. (1964–65 and alternate years.)

222 *Elementary Particles* (3) Jehle
Scalar, vector, spinor fields, and elementary particles. Symmetry properties and associated conservation laws. Space inversion and parity, time reflection, charge conjugation. Prerequisite: Physics 219–20. (1963–64 and alternate years; spring—evening.)

227 *Irreversible Processes* (3) Yeandle
Extension of thermodynamic concepts to irreversible processes. Discussion of thermodynamic forces and fluxes, and the Onsager reciprocal relations. Review of the statistical mechanical reasons for assuming the postulate of irreversible thermodynamics. Prerequisite: Physics 102, 114; Mathematics 112. (Spring—evening.)

255–56 *Graduate Laboratory* (4–4) Hobbs
Individual work on special topics. One semester of this course is required of all Master's candidates in physics. Students electing this course may begin with Physics 255 or 256. Not open to undergraduates. Material fee, $11 a semester. (*First half:* fall—day. *Second half:* not offered 1963–64.)

291–92 *Seminar: Recent Developments in Physics* (1–1) The Staff
Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence. (Academic year: alternate weeks—Monday evening.)

290 *Thesis* (3–3) The Staff
Fees to be arranged. (Academic year—as arranged.)

PHYSIOLOGY *

Professors C. E. Leese, E. M. Renkin *(Chairman)*
Associate Professor F. P. J. Diecke
Assistant Professors Ruth Henderson, C. S. Tidball *(Research)*, Margret Westecker
Lecturers Eugene Braunwald, J. F. Hoffman, D. P. Rall, R. J. Podolsky

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Special Lecturers S. J. Sarnoff, J. H. U. Brown

Master of Arts or ***Master of Science in the field of Physiology.***—Undergraduate work should include chemistry and physics. It should be supplemented by further courses in mathematics and science such as calculus, physical and organic chemistry.

Required: the general requirements, pages 78–81. In addition to the thesis, the thirty hours of required work should include Physiology 221 or 222, 232, and at least three semester hours of research (Physiology 295 or 296).

Doctor of Philosophy (Graduate Council).—See pages 83–90.

115 *Introduction to Human Physiology* (3) Leese
Lectures on the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of biological science. (1963–64 and alternate years: fall—TTh 5:10–6:25 pm.; 1964–65 and alternate years: fall—TTh 8:45–10 am.)

130 *Psycho-Physiology* (2) Leese
Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. (Spring—TTh 5:10 pm.)

137 *Vertebrate Physiology* (4) Tidball and Staff
Fundamental principles of physiology as exemplified in the vertebrates. Prerequisite: Chemistry 11–12; Mathematics 3; and Physics 11, 12; or the equivalent. Laboratory fee, $18. (Fall—lecture, MWF 11:10–12 am.; laboratory, F 1:10–5 pm.)

150 *Medical Physiology* The Staff
Lecture and laboratory work in all divisions of physiology. This course is designed for medical students. (Spring—lecture 7 hours a week, laboratory 9 hours a week.)

170 *General Physiology* (3) Westecker
Lectures on basic topics in the physiology of cells and tissues. Prerequisite: Physiology 137 or 150, or Botany 135; and the consent of the Instructor. (Spring—T 11:10–12 am., Th 10:10–12 am.)

211–12 *Problems in Physiology* (arr.) The Staff
Directed study under the supervision of a staff member. Prerequisite: Physiology 137, 150, or 232, and the consent of the instructor. (Academic year—as arranged.)

221–22 *Physiology Seminar* (1–1) Henderson and Staff
Prerequisite: Physiology 137, 150, or 232, and a reading knowledge of French or German. (Academic year—as arranged.)

232 *Advanced Mammalian Physiology* (10) Diecke and Staff
Lecture 7 hours a week, laboratory 9 hours a week. Prerequisite: Chemistry 11–12; Mathematics 3; Physics 11, 12; or the equivalent. It is recommended that Biochemistry 221–22 be taken as a prerequisite or concurrently. (Spring—MWF 1–5 pm.; TTh 1–3 pm.)

* The Staff of Instruction is for the academic year 1962–63.

259 *Comparative Physiology* (2) Diecke
Lectures and seminars on topics of current interest in comparative physiology, with emphasis on nonmammalian forms. Prerequisite: Physiology 137, 150, 170, or 232, or Zoology 162; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

265 *Physiology of Cell Membranes* (2)
Lectures and seminars on ionic and molecular transport through biological membranes. Prerequisite: Chemistry 111–12 or Physics 181; *and* Physiology 150, 170, or 232, or Botany 135–36; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

281 *Biophysics* (2) The Staff
Lectures and seminars on biological topics which require development along physical lines. Prerequisite: Chemistry 111–12 or Physics 181 and the consent of the instructor. (1963–64 and every third year: fall—as arranged.)

295–96 *Research* (arr.) The Staff
Prerequisite: Physiology 137 and 170; 150 or 232; or the equivalent. (Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

POLITICAL SCIENCE*

Professors W. R. West *(Emeritus)*, J. W. Brewer *(Chairman)*, W. H. Kraus, K. L. London
Professorial Lecturer F. M. Riddick
Associate Professors H. L. LeBlanc, Benjamin Nimer, H. R. Ludden
Associate Professorial Lecturer H. M. Bain, Jr.
Assistant Professors P. W. Conner, Kenneth McDonald
Lecturer C. H. Slayman, Jr.

Bachelor of Arts with a major in Political Science (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Political Science 9–10.
Required: in addition to the general requirements, pages 73–77, thirty semester hours from the following groups distributed as follows: twelve hours from Group A; six hours from Group B; six hours from Group C; and six additional hours from any group or groups. The student will normally complete all six hours of any full-year course which he selects.
Group A: Political Science 111, 112, 117–18, 121–22. Group B: Political Science 171, 172, 181–82. Group C: Political Science 104, 125, 145, 146, 151–52. Group D: 105, 107, 113, 119, 120, 141, 157–58, 177–78, 187–88, 191–92, 194.
Undergraduate students interested in preparing for graduate work in Public Administration will consult the Chairman of the Department of Political Science for modifications of the above requirements.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—See the Department of History.

Master of Arts in the field of Political Science.—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University (or the equivalent major elsewhere) with a *B* average (or better) in the major.

* The Staff of Instruction is for the academic year 1963–63.

Required: the general requirements, pages 78–81. The thirty hours of required work must be approved in advance by the Adviser.

Master of Arts in the field of Latin American Civilization.—See the Department of History.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Government or *Master of Arts in Government in the fields of International Affairs* or *Public Affairs.*—See pages 149–51, 151–52, 157–59, 160–61.

FIRST GROUP

1 *Introduction to Government** (3) The Staff
Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day; summer 1963.)

9–10 *Government of the United States** (3–3) The Staff
First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

SECOND GROUP*

104 *State and Local Governments* (3) LeBlanc
State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—evening.)

105 *The Governmental Process of the District of Columbia* (3) LeBlanc
Legal structure and political problems of the District of Columbia including restrictions on home rule, Congressional relations, and group politics. (Not offered 1963–64.)

107 *Problems in Modern Political Thought* (3) Kraus
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Not offered 1963–64.)

111 *Introduction to Comparative Government and Politics* (3) Kraus
Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening.)

112 *Introduction to Comparative Government and Politics* (3) Kraus
Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)

113 *Political Problems of the British Commonwealth of Nations* (3) Kraus
From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Not offered 1963–64.)

117–18 *Political Theory: the Nature and Growth of Political Thought in the West* (3–3) Kraus
First half: from Classical Antiquity to the Middle Ages; the forging of the western political tradition. *Second half:* from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

119–20 *Foundations of American Democracy* (3–3) Conner
Introduction to political thought in the United States from colonial times to the present. (Academic year—evening.)

121–22 *The Constitution of the United States* (3–3) West
Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights. (Academic year—day and evening; summer 1963—Political Science 121 (3).)

125 *Legislative Organizations* (3) Riddick
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1963–64 and alternate years: fall—evening.)

141 *The Development of Legal Institutions* (3) Brewer
Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)

145 *Political Parties and Politics* (3) LeBlanc
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day; summer 1963.)

146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)

151–52 *Public Administration* (3–3) LeBlanc
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (*First half:* fall—evening; summer 1963. *Second half:* not offered 1963–64.)

157–58 *Current Problems in Domestic Politics* (1–1) Slayman
Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)

166 *Field Work in Government* (3) LeBlanc
Practical training in the operation of the Federal Government, based on experience through assignment to selected government offices. Students will have an opportunity to observe and participate in government in the Washington area. Open only to students in the Public Affairs curriculum, School of Government, Business, and International Affairs. (Fall and spring—as arranged.)

171 *International Politics* (3) Ludden, Nimer
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1963.)

172 *International Organization: the United Nations* (3) Ludden
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening; summer 1963.)

177 *Recent Trends in Latin American Politics and Government* (3) Davis
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. (Fall—evening; summer 1963.)

178 *International Politics in the Western Hemisphere* (3) Davis
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)

181–82 *International Law* (3–3) Brewer
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1963—Political Science 181 (3).)

187–88 *Current Problems in International Politics* (1–1) Slayman
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)

191 *Politics of the Middle East* (3) Nimer
Domestic and international politics of Turkey, Iran, Israel, and the Eastern Arab States and Principalities. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening.)

192 *Politics of North and Central Africa* (3) Nimer
Domestic and international politics of the Western Arab States, Ethiopia, Somalia, Liberia, and the newly independent states of former British, French, and Belgian Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Spring—evening.)

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region. (Spring—evening.)

197 *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3) Nimer
Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—evening; spring—day.)

THIRD GROUP

209–10 *Seminar: the Federal Government of the United States* (3–3) West
Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the presidency; and presidential policy leadership and control. (Academic year—evening.)

212 *Seminar: Comparative Government and Politics* (3) Kraus
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—evening.)

213 *Readings in Comparative Government and Politics* (3) Kraus
Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—evening; summer 1963.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Fall—evening.)

220 *Reading Course in Political Theory* (3) **Kraus**
Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Spring—evening.)

221–22 *Seminar: United States Constitution and the Judicial Function* (3–3) **Conner**
A study of constitutional interpretation as an aspect of the political process. (Academic year—evening.)

235 *Metropolitan Problems* (3) **Bain**
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.)

245–46 *The American Political Process: Political Parties and Interest Groups* (3–3) **LeBlanc**
First half: readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.)

271–72 *Problems in International Politics and Organization* (3–3) **Ludden**
A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations. (Academic year—evening.)

273 *Public Opinion and Foreign Policy* (3) **Ludden**
Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—day.)

274 *Methods and Objectives of Foreign Policy* (3)
Examination of the objectives of foriegn policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives. (Spring—evening.)

277 *Seminar: Latin American Government* (3) **Davis**
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.)

278 *Seminar: Latin American Political Philosophy* (3) **Davis**
Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)

279 *Reading Course in International Affairs* (3)
Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. (Fall—evening; summer 1963.)

281–82 *Seminar: International Law and Relations* (3–3) **Brewer**
Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (*First half:* summer 1963. *Second half:* spring—evening.)

292 *International Politics and Government in the Middle East* (3) **Nimer**
Research and analysis of the international relations and major political problems of the Arab world and adjacent areas. (Spring—evening.)

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3)
Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff

(Academic year—as arranged; summer 1963.)

INSTITUTE FOR SINO-SOVIET STUDIES

212 *Seminar: Comparative Government and Politics* (3) Kraus

Common and distinctive characteristics of the political systems within the Soviet Bloc. Variations in such areas as ideology, party, and governmental elites; party organization and activity; the military and its place; policies which illuminate the rise of polycentrism. (Spring—evening.)

215–16 *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3) London

First half: an integrated survey of the most significant issues of the Communist Movement and its manifestations in the Soviet Union and Red China. The effects of communist policy, strategy, and tactics on Bloc relations with the Western alliance and the neutral areas. *Second half:* examination of the political ramifications of the International Communist Movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America. (Academic year—evening.)

217 *Seminar: Topics in Political Theory* (3) Kraus

Crucial theoretical problems, such as the nature of revolution, the dictatorship of the proletariat, the transition to communism, imperialism and national liberation in their development from Marx and Engels to Lenin, Khrushchev, and Mao Tse-tung. (Fall—evening.)

227 *Seminar: the East European Satellites* (3)

Survey: political, economic, and social conditions in the East-Central European Soviet satellites; emphasis on their relations with the USSR, the Warsaw Pact alliance, and their affiliation with the Council of Mutual Economic Assistance. Yugoslavia and Albania (break with Moscow and alliance with Peking). (Fall and spring—evening.)

230 *Seminar: Operational Techniques of International Communism* (3) Metzl

Strategy and tactics of the International Communist Movement in the post-Stalin period, with emphasis on the *modus operandi* of Communist Parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements. (Fall and spring—evening.)

238 *Seminar: Legal Order in the USSR—a Survey of Soviet Law* (3)* Ramundo

Soviet legal system with particular emphasis upon the conventional nature of many of the Soviet solutions to the problem of bringing order to society; the unique Soviet features, such as "economic law," "socialist legality," the role of the Communist Party, and the "collective" as an arm of the law; and the impact of the legal system upon the individual. (Fall—evening.)

239 *Seminar: Communist Chinese Constitutional Law* (3)

Communist China's legal system; its unique features and differences with the Soviet Constitution; the constitutional role of the Communist Party and the Communist ideology; the impact of the Chinese legal system upon the lives of the individuals. (Fall and spring—evening.)

265 *Seminar: Communist Chinese Foreign Policy and Strategy* (3)

The external policies of Communist China and its relations with Bloc and non-Bloc countries; emphasis on Sino-Soviet relations; the world objectives of Chinese Com-

* Graduate students wishing to register for Political Science 238 in the spring semester may, with the approval of the adviser, register for Law 493 *Soviet Law* (2) and be given supplementary assignments equivalent to one additional semester hour.

munist leaders; Peking's international propaganda; foreign economic relations; expansionist intentions toward South and Southeast Asia. (Fall and spring—evening.)

267 *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)

Relations between the Communist Bloc and the former colonial countries in Asia and Africa; Soviet and Communist Chinese economic and political infiltration of the new states; Sino Soviet encroachment in Latin America. (Fall and spring—evening.)

270 *Seminar: Problems of Soviet Political Strategy—Case Studies* Garthoff (3)

Analysis of a selected major Soviet foreign political problem, undertaken partly by each student individually and partly by the seminar, to clarify the various international political, military-political, economic, propaganda, and other factors which enter into Soviet policy-making. Assignment of individual problems will be based on the particular interests and background of each student. (Spring—evening.)

288 *Seminar: Communist Military Policy and Strategy* (3) Wolfe

Soviet developments in the area of military policy and strategy, with some attention to questions of intra Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought. (Fall and spring—evening.)

294 *Seminar: International Politics and Government in the Pacific Area* (3)

The Yenan period; Communist growth from 1937 to 1945; military developments; the breakdown of the united front and the triangular Communist-Kuomintang-Japanese struggle; special features of Chinese Communists during this period. American mediation and the second civil war, 1945–1949. The Chinese People's Republic; social, economic, and political developments; changes in the party line and their reflections in foreign policy. (Spring—evening.)

296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3) Hinton

The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian Communist states; local Communist parties since World War II; Sino-Soviet rivalry. (Spring—evening.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers political science courses listed below for students in the following special programs: Air Force Advanced Management Program, the War College Programs.

260 *Fundamentals of National Power** (3) The Staff

261 *International and United States Foreign Policy** (3) The Staff

262 *National Security Policy of the United States** (3) The Staff

263 *Topics in International Law* (3) Brewer

A consideration of theory, problems, and cases in the public law of nations, including the law of peace and the law of war.

265 *Diplomacy Since World War II* (3) Jordan

Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

* Limited to students in the Master of Arts in International Affairs programs at the Army War College, National War College, Air War College, and Navy War College.

287 *American Military Policy* (3) Eitler
Examination of the nature of military policy and its relation to domestic and foreign policy, the historical element, organization within the military establishment for policy making.

297 *Readings in International Affairs** (1 to 2) Ludden
Directed individual readings in core curriculum subjects of the war college programs.

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor J. F. Sadusk, Jr. *(Chairman)*
Clinical Professors R. G. Beachley *(Emeritus)*, Murray Grant
Professorial Lecturer D. L. Finucane
Associate Clinical Professors David Frost, G. O. Pierce, W. J. Zukel
Assistant Clinical Professors L. A. Pyle, J. H. Vinyard
Instructor F. J. Kessler
Clinical Instructors W. F. Morrissey, A. H. Traum

Special Lecturers R. C. Cook, W. J. Peeples, G. O. Pierce

210 *Preventive Medicine and Community Health* (2) Sadusk and Staff
A lecture-seminar covering fundamental aspects of preventive medicine, occupational medicine, public health, community health, and the place of the physician in his community. Current socio-economic medical problems will be discussed in preparation for later clinical years. Open to pharmacy and graduate students. Prerequisite: Microbiology 112 or the equivalent. (Spring—M 2:00–4:00 P.M.)

301 *Continuing Care Program* Sadusk and Staff
Medical care program carried out with the assistance of clinical faculty members from Medicine, Obstetrics, and Surgery. Students enter the program in their junior year and are responsible, under specific preceptors, for the diagnosis and care of selected medical, obstetrical, and surgical patients in the outpatient clinic and hospital units on a long-term basis until graduation. University, Fairfax, and Washington Hospital Center hospitals. Health maintenance, development of the family doctor-patient relationship stressed; introduction to the use of community health facilities. (Fall—T or Th 8:00–12:00 A.M.)

302 *Continuing Care Program* Sadusk and Staff
Continuation of Preventive Medicine and Community Health 301. (Spring—T or Th—as arranged and required for care of patients.)

401 *Continuing Care Program* Sadusk and Staff
Continuation of Preventive Medicine and Community Health 302. (Fall—T or Th—as arranged and required for the care of patients.)

402 *Continuing Care Program* Sadusk and Staff
Continuation of Preventive Medicine and Community Health 401. (Spring—T or Th—as arranged and required for the care of patients.)

* Limited to students in the Master of Arts in International Affairs programs at the Army War College, National War College, Air War College, and Navy War College.

PSYCHIATRY *

Professors Leon Yochelson *(Chairman)*, Samuel Yochelson *(Research)*
Clinical Professors Joel Elkes, J. D. Schultz, D. C. Cameron, F. A. Freyhan, D. M. Bullard, Douglas Noble
Associate Professor J. E. Rankin
Associate Clinical Professors H. P. Laughlin, M. deG. Ruffin, Sidney Berman, Morris Kleinerman, Anna Todd, Norman Taub, Leon Ferber, P. H. Gray, I. W. Kaiser
Assistant Clinical Professors Sarah Tenenblatt, Richard Schaengold, David Eden, C. T. Bever, Joseph Abrahams, Paul Chodoff, R. M. Greenberg, Helen Pallister, M. L. Adland, W. D. Kehne, H. A. Meyersburg, S. L. Werkman, J. B. Chassan, R. W. Gans, F. G. Hilkert
Associates W. C. Johnson, R. A. Rogers, J. A. Farrell, S. C. Gordon, H. B. Lehrman, R. A. Frank, Helen Pearcy, A. M. Drummond, G. W. Sprehn, N. C. Rintz, Leslie Schaffer, J. L. Sheridan, L. J Duhl, D. W. Harris, A. H. Kiracofe, Jr., T. M. Mackenzie, B. W. Murphy, Daniel Prager, F. N. Waldrop, F. A. Board, R. N. Butler, T. E. Griffin, E. I. Kushner, D. B. Price, M. A. Woodbury, W. H. Young, Christine Kehne
Clinical Instructors Maxwell Boverman, J. H. Bouma, Jean Menetrez, Bertram Brown, B. L. Burris

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Special Lecturers R. H. Felix, Mathew Ross

165 *Introductory Medical Psychology* — Berman
An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships. (Spring—1 hour a week.)

178 *Psychopathology* — Rankin
Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material. (Spring—1 hour a week.)

266 *Psychiatry* — Yochelson
Psychiatry in the practice of Medicine. Techniques of interviewing. (Spring—1 hour a week.)

268 *Clinical Psychiatry* — Freyhan, Chodoff, and Staff
History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole. Presentation of clinical cases of major mental illnesses and primary behavior disturbances. St. Elizabeths and D. C. General hospitals. (Spring—3 hours a week.)

272 *Psychosomatic Aspects of General Medicine* — Ruffin
Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders. (Spring—1 hour a week.)

* The Staff of Instruction is for the academic year 1962–63.

Ferber

324 *Psychoneurosis*
Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. Medical Conference Room, D. C. General Hospital. (Spring—1 hour a week.)

The Staff

431–32 *Clinical Clerkship*
Supervised examination, diagnosis, and treatment of ambulatory cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital. (Three weeks divided service as arranged during academic year.)

PSYCHOLOGY *

Professors Thelma Hunt *(Chairman)*, J. L. Finan, E. L. Phillips
Professorial Lecturers H. F. Hubbard, Margaret Ives
Associate Professors C. E. Tuthill, W. E. Caldwell, J. N. Mosél, R. D. Walk, Eva Johnson, C. W. Hill, Virginia Kirkbride, L. E. Schlesinger *(Research)*
Associate Professorial Lecturers J. G. Colmen, C. J. Lindley
Assistant Professors R. E. Nolan, Lila Ghent *(Research)*, Jacqueline Goodnow *(Research)*, R. R. Bonato *(Research)*, R. C. Petersen *(Research)*
Associate Janet Johnson

Bachelor of Arts with a major in Psychology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, nine semester hours in first-group courses in Psychology, including Psychology 5–6.

The general requirements for the degree are stated on pages 73–77. The sixty required semester hours must include twenty-four hours in Psychology in addition to those taken as prerequisites, including Psychology 101, 118, 131, 151, and 196; and Statistics 53 or 104.

Master of Arts or *Master of Science in the field of Psychology.*—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements, pages 78–81. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in Psychology including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) counseling, (3) clinical, (4) social, (5) personnel, (6) experimental, (7) personality, and (8) experimental comparative. For detailed requirements consult the Chairman of the Department.

Doctor of Philosophy.—See pages 83–90.

Master of Arts in Government, Master of Business Administration, or *Master of Public Administration in the field of Personnel Administration.*—See pages 157–59, 161–62, 164–65.

Master of Arts in Education in the fields of Employee Training and of Guidance.—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. See pages 140–42.

* The Staff of Instruction is for the academic year 1962–63.

FIRST GROUP

1 *General Psychology** (3) — The Staff

The fundamental principles underlying human behavior. (Fall and spring—day and evening; summer 1963.)

5-6 *Principles and Methods of Psychology** (3-3) — Walk and Staff

Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Required of all psychology majors, who should take the course early in the major. May be taken without Psychology 1. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)

8 *Psychology of Adjustment* (3) — The Staff

(Formerly Psychology 4)

Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1963 (offered as Psychology 4).)

22 *Introduction to Educational Psychology* (3) — J. Johnson

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day.)

29 *Child Psychology* (3) — E. Johnson

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1963.)

SECOND GROUP†

101 *Abnormal Psychology* (3) — Nolan, Hunt

The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1963.)

112 *Adolescent Psychology* (3) — E. Johnson

Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day.)

115 *Psychology of Language and Communication* (3) — Mosél

An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day.)

118 *Physiological Psychology* (3) — Finan, Hill

Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior. (Fall—evening; spring—day; summer 1963.)

121 *Educational Psychology* (3)

Advanced course in educational psychology. Designed for those with background in education and psychology. (Fall and spring—evening; summer 1963.)

129 *Introduction to Counseling* (3)

A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. (Fall—evening; summer 1963.)

* Psychology 1 or 5-6 is prerequisite to all other courses in Psychology.

† Six credits in first-group courses are prerequisite to all second-group courses.

131 *Psychological Tests* (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. (Fall—evening; spring—day; summer 1963.)

144 *Personnel Psychology* (3) Mosél
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.)

148 *Psychology of Advertising and Consumer Behavior* (3)
The motivational and social processes in economic behavior. Consideration of current techniques and findings in motivational research. Evaluation of the effectiveness of mass media, public relations programs, and strategies of persuasion. (Fall—evening.) Tuthill

151 *Social Psychology* (3)
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war. (Fall—evening; spring—day; summer 1963.) Tuthill

156 *Psychology of Propaganda and Public Opinion* (3)
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (Spring—evening; summer 1963.) Caldwell

161 *Comparative Psychology* (3)
A lecture course in animal psychology. Covers psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation and research in psychology. (Spring—day.) Caldwell

162 *Experimental Comparative Psychology* (3)
Opportunity for individual psychological experimentation using lower animals as subjects. Offered on independent study plan. Prerequisite: Psychology 161 and permission of the instructor. (Fall and spring—as arranged.) Hill, Walk

192 *Problems in Experimental Psychology* (3)
Opportunity for work on individual experimental projects. Prerequisite: Psychology 5–6 and permission of the instructor. (Fall and spring—as arranged.) The Staff

193–94 *Readings in Psychology* (3–3)
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality point index of 3.00 or higher. Admission by special permission of the instructor. (Academic year—as arranged; summer 1963.) Caldwell

196 *History and Systems of Psychology* (3)
A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology. (Fall—day; spring—evening; summer 1963.) Walk

198 *Current Research Issues in Psychology* (3)
Class will be conducted as a seminar and will consider recent experiments in Psychology, including those performed by undergraduates. Emphasis is on student participation. Open only to senior psychology majors. (Spring—day.)

THIRD GROUP*

201 *Advanced General Psychology* (3) Hill
An integrated review of history, theory, and facts in the area of general psychology: perception, motivation, learning, and cognition. Required of all psychology Master's candidates. (Fall—day; spring—evening; summer 1963.)

* Open only to graduate students, except by special permission of Instructor and Chairman of the Department.

202 *Psychological Research Methods and Procedures* (3) Walk
Required in all graduate programs. Prerequisites: Experimental Psychology and an elementary course in statistics. (Fall—evening; spring—day; summer 1963.)

207–8 *Readings in Psychology for Graduate Students* (3–3) The Staff
Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings. (Academic year—as arranged; summer 1963.)

209 *Seminar: Psychology of Motivation* (3) Caldwell
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. (Fall—evening.)

212 *Personality Evaluation by Projective Techniques* (3) Nolan, Ives
Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 233. (Fall—day; spring—evening.)

213 *Clinical Psychometrics* (3) Ives
A study of the clinical applications of nonprojective tests. Prerequisite: Psychology 233. (Spring—evening.)

215 *Advanced Study of Projective Techniques* (3) Nolan, Ives
Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212. (Fall—evening; spring—day.)

217 *Seminar: Developmental Psychology* (3) Ghent
(Spring—day.)

218 *Seminar: Clinical Psychology—Psychopathology* (3) Nolan
Covers basic etiological factors in behavioral and psychological deviations and disorders. (Fall—day.)

219 *Seminar: Clinical Psychology—Psychotherapy* (3) Nolan
Covers theoretical principles underlying psychotherapy, techniques and procedures, and problems of evaluation. (Spring—evening; summer 1963.)

220 *Seminar: Abnormal Psychology* (3) Hunt
An intensive study of selected problems in the field of abnormal psychology. (Fall—day; spring—evening.)

223 *Seminar: Learning* (3) Finan
Covers research and theory in the psychology of learning. (Fall—evening.)

225 *Seminar: Mental Hygiene* (3) Phillips
A study of mental health problems with special attention to needs of counselors, teachers, and others working with children and adolescents. (Fall—evening; spring—day.)

226 *Seminar: Clinical Psychology of Childhood and Adolescence* (3) E. Johnson
A survey of behavior and personality disorders. (Spring—evening.)

231 *Test Construction* (3) Mosél
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics. (Fall—evening.)

233 *Individual Psychological Testing* (3) E. Johnson
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7. (Fall and spring—day.)

234 *Seminar: Test Theory* (3) Mosél
Development of the axiomatic-deductive theory underlying the major notions in the construction, evaluation, and application of psychological tests. (1964–65 and alternate years.)

235 *Seminar: Psychological Measurement* (3) Hunt
Advanced instruction in the use and interpretation of psychological tests, with emphasis upon group tests; survey of recent research in psychological measurement. Prerequisite: a course in psychological or educational measurement. (Spring—evening.)

244 *Seminar: Job Analysis and Evaluation* (3) Mosél
(Summer 1963.)

245 *Seminar: Employee Motivation and Morale* (3) Mosél
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design. (Spring—evening.)

246 *Seminar: Personnel Measurement Techniques* (3) Mosél
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (Fall—evening.)

249 *Seminar: Systems Development and Human Engineering* (3) Finan
Application of findings and methods of experimental psychology to design and operation of equipment and man-machine systems. Relation of capacities of the operator to information display systems, control mechanisms, work environment, and work methods. (Fall—evening.)

251 *Seminar: Advanced Social Psychology* (3) Tuthill
Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory. (Fall—evening.)

254 *Seminar: Group Dynamics* (3) Tuthill
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes. (1963–64 and alternate years: spring—evening.)

255 *Seminar: Techniques of Opinion and Attitude Measurements* (3) Tuthill
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc. (1964–65 and alternate years.)

258 *Applied Social Psychology* (3) Mosél
The development of personality, personality adjustment, nature of communication and interaction; structure and functioning of groups, group dynamics, opinion and attitude formation, and opinion and attitude measurement. Classroom activity supplemented by practical observations and projects. Open only to graduate students in hospital administration, engineering administration, and other graduate administrative programs. (Spring—day and evening.)

261 *Seminar: International Communication* (3) Mosél
The communication process, problems in mass communication, measuring and modifying opinions and attitudes, principles of persuasion, psychological warfare. (1963–64 and alternate years: spring—evening.)

262 *Dynamics of Social Change* (3) Lippitt
Current research and theory related to the process of social change. Basic principles of planned change will be explored in connection with individual, group, organization, community, and cultural change. Human factors in the change process will be emphasized. (Spring—evening.)

264 *Sensitivity Training: Human Relations Laboratory Course* (3) Lippitt
A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunities for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology. (Fall and spring—evening.)

265 *Theory and Design in Human Relations Training* (3) Lippitt
Designed for those interested or involved in conducting human relations training. Theories of learning are reviewed. The laboratory approach to human relations training is explored in depth. Practice in designing, developing training skills, and evaluation of training are covered. Prerequisite: Psychology 264 or a human relations laboratory learning experience. (Fall—day.)

267 *Theories of Organization* (3) Schlesinger
Theory and research in formal organizations. Classical, human relations, and information processing theories of organizations. The effects of organizational design on communication processes, leadership, decision-making, intergroup relations, small group formation, status hierarchies, productivity, motivation, and morale. Open to graduate students in psychology and graduate administrative programs. (Spring—day.)

272 *Seminar: Theories of Personality* (3) Caldwell
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. (Fall—evening.)

281–82 *Practicum in Counseling* (3–3) Phillips
Supervised practical instruction in agencies doing counseling. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

283–84 *Practicum in Clinical Psychology* (3–3) Nolan
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

289–90 *Seminar: Current Research and Theory in Psychology* (3–3)
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester. (Academic year—evening; summer 1963—Psychology 289 (3).)

292 *Seminar: Perception* (3) Walk
Study of current research and theory in the experimental psychology of perception. (Spring—day.)

293 *Seminar: Psychology of Thinking* (3) Goodnow
Thinking and problem solving. Specific topics include: concept formation, the nature of insight, creative thinking, and originality. (Fall—evening.)

295–96 *Research in Psychology* (arr.) The Staff
Individual research by student, carried out under supervision of staff member. (Academic year—as arranged; summer 1963.)

297–98 *Seminar: Concepts of Psychology* (4–4) Finan and Staff
Lecture (3 hours), discussion (1 hour). An overview and analysis of the concepts and major areas of psychology. Designed as a review and integration of knowledge for the Ph.D. candidate preparing for the Comprehensive Examination in general psychology and as a preparation for specialized study and individual research. Required of all Doctoral candidates in psychology. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses, which are available only to students enrolled in the Engineering Administration program and the Off-Campus Division of the College of General Studies.

145 *Principles of Human Relations* (3)

149 *Human Relations in Management* (3)

RADIOLOGY *

Professor W. W. Stanbro *(Chairman)*
Associate Clinical Professor H. J. Kicherer
Assistant Professor C. F. Murphy
Assistant Clinical Professors Charlotte Donlan, S. R. Bersack, H. L. Berman, J. T. Brennan, Albert Bauer, Henry Harrell, A. C. Wyman
Associate S. W. Smith
Instructor W. J. Nelson
Clinical Instructors George Tievsky, U. V. Wilcox II, C. M. Weber, Nan Van Wagenen, Zeki Erim

115–16 *Anatomy* — The Staff
Correlation of gross and Roentgen anatomy. (Academic year—as arranged.)

220 *Principles of Radiology* — The Staff
Lectures and discussions. (Spring—1 hour a week.)

313 *Advanced Radiological Diagnosis* — The Staff
Lectures and discussions. (Fall—as arranged.)

421–22 *Clinical Studies* — The Staff
Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

* The Staff of Instruction is for the academic year 1962-63.

RELIGION *

Professor J. R. Sizoo
Associate Professor R. G. Jones *(Acting Chairman)*
Associate Professorial Lecturers C. D. Kean, Damian McElrath
Lecturers A. B. Seidman, E. W. Seaman

Bachelor of Arts with a major in Religion (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Religion 9, 10, and 59-60.

Required: the general requirements, pages 73–77, including a minimum of eighteen semester hours in religion beyond first-group courses.

Master of Arts in the field of Religion.—Prerequisite: an undergraduate major in Religion at this University or the equivalent.

Required: the general requirements, pages 78–81. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least twelve must be in third-group religion courses; a maximum of nine may be in a closely related field outside the Department of Religion as approved by the Department.

Master of Arts in the field of Religious Education.—Prerequisite: an undergraduate major in Religion at this University or the equivalent; the following specific courses or the equivalent: Education 108; Psychology 1, 22, and 29; Anthropology 1; Speech 1 or 11.

Required: the general requirements, pages 78–81. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least six must be in third-group religion courses; a maximum of twelve may be in a closely related field outside the Department of Religion as approved by the Department.

Doctor of Philosophy in the field of the History of Religion in the United States.—See pages 83–90.

FIRST GROUP

9 *The Old Testament* (3) — Jones and Staff

A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening.)

10 *The New Testament* (3) — Jones and Staff

A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. (Spring—day and evening; summer 1963.)

59–60 *History of Religion* (3–3) — The Staff

First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. (Academic year—day and evening; summer 1963.)

SECOND GROUP

103 *The Prophets, Their Times and Their Message* (3) — Jones

The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic

* The Staff of Instruction is for the academic year 1962-63.

teaching. A few of the prophets will be selected for particular study. (Fall—evening.) Kean

104 *The Life and Thought of Jesus* (3)
A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times. (Spring—evening.) Jones

105 *The Life and Thought of Paul* (3)
Greek and Hebrew backgrounds of early Christianity, the Roman world of the first century, religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's teaching and presentation of the Christian faith, the place of the Pauline epistles in the New Testament. (Fall—day.)

121 *Problems of Western Religious Thought* (3)
The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history. (Not offered 1963–64.) Jones

122 *Christian Ethics and Modern Society* (3)
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. (Summer 1963.) McElrath and Staff

131 *History of Christianity to the Reformation* (3)
The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent. (Fall—day.) McElrath and Staff

132 *History of Modern Christianity* (3)
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day.) Seaman

135 *History of Judaism to the Talmud* (3)
A study of the history and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day.) Seaman

136 *History of Medieval and Modern Judaism* (3)
A study of the history and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day.)

141–42 *Religious Education* (3–3)
Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1963–64.) The Staff

172 *Religion in American Culture* (3)
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion. (Spring—day.)

THIRD GROUP

209–10 *Seminar in Biblical Literature* (3–3)
Study of the main problems of Biblical literary and historical criticism. (Not offered 1963–64.) Jones

211–12 *Seminar in Biblical Thought* (3–3)
Study of the Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Academic year—evening.) Jones

231–32 *Seminar in Early and Medieval Christianity* (3–3) Jones and Staff
An advanced study of the development of Christian thought from primitive beginnings to the Reformation. (Not offered 1963–64.)

233–34 *Seminar in Modern Religious Thought* (3–3) The Staff
Analysis of developments in western religious thought from the 16th century to the present. (Academic year—evening.)

241–42 *Seminar in Religious Education* (3–3)
Advanced course dealing with some of the major problems in the practice of religious education. (Not offered 1963–64.)

271 *Seminar in American Religious History to 1830* (3) The Staff
Study of religious thought and life during the colonial and early national period. (Fall—as arranged.)

273 *Seminar in American Religious History since 1830* (3)
Analysis of modern and contemporary trends in American religious thought. (Not offered 1963–64.)

291–92 *Readings and Research* (3–3) The Staff
Investigation of special problems in the history of religion. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

RELATED COURSES IN OTHER DEPARTMENTS

Art 115, *Christian Iconography* (3)
Classical Languages and Literatures 11–12, *First-year Greek* (3–3)
Classical Languages and Literatures 13–14, *Second-year Greek* (3–3)
Classical Languages and Literatures 21–22, *First-year Classical Hebrew* (3–3)
Classical Languages and Literatures 23–24, *Second-year Classical Hebrew* (3–3)

ROMANCE LANGUAGES AND LITERATURES *

Professors A. T. Deibert *(Emeritus)*, G. E. McSpadden, L. A. Vignéras, Rafael Supervia
Associate Professors J. W. Robb, W. C. Clubb *(Chairman)*, C. Y. Meade, G. E. Mazzeo
Assistant Professors J. L. Metivier, Jr., Carlos Lozano, J. A. Frey, Fred Abrams
Instructors Elizabeth Neyman, G. P. Huvé, Eulogia Llansa, R. M. Riggs
Language Workshops Supervisor R. T. Tyser

Courses are generally conducted in the language concerned. For General Courses in Romance Languages and Literatures (French, Italian, Portuguese, Spanish) see pages 242–43.

Bachelor of Arts *with majors in* (1) *French Language and Literature*, (2) *Spanish-American Literature*, and (3) *Spanish Language and Literature (Field-of-Study)*.—Prerequisite: the Arts and Letters curriculum, page 67.

* The Staff of Instruction is for the academic year 1962–63.

Required: the general requirements, pages 73–77 and the grade "pass" on the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers and their works. Proficiency in the spoken and written language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is generally required for graduate work. The Department provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

Master of Arts in the fields of (1) *French Language and Literature*, (2) *Spanish-American Literature*, and (3) *Spanish Language and Literature*—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements, pages 78–81. The thirty hours of required work must include a thesis, for which six hours of credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).—Prerequisite: a Bachelor of Arts degree, preferably with a major in French, German, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required: the general requirements, pages 78–81, including a thesis and 24 semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, German, Mathematics, Psychology, and Spanish listed on pages 284–85.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Arts in Education with teaching fields in French and in Spanish.—Prerequisite: the Education curriculum, page 69.

Required: the French option or the Spanish option and the professional courses listed in the School of Education Catalogue.

FRENCH

FIRST GROUP

The Staff

1–2 ***First-year French*** **(3–3)**

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

The Staff

3–4 ***Second-year French**** **(3–3)**

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: French 1–2 or two years of high school French. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

The Staff (Academic year—day and evening; summer 1963.)

9–10 ***French Conversation and Composition*** **(3–3)**

Prerequisite: French 4 or the equivalent and permission of the instructor.

Frey and Staff

49 ***French Readings for Nonmajor Students*** **(3)**

Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1963.)

Metivier

51–52 ***Survey of French Literature and Civilization**** **(3–3)**

The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening.)

* French 3–4 is required, and French 51–52 is recommended, as prerequisite to all second-group courses.

SECOND GROUP*

109–10 *Advanced French Conversation and Composition* (3–3) Vignéras
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: French 10 or the equivalent and permission of the instructor. (Academic year—day.)

119–20 *French Literature of the 16th Century* (3–3) Metivier
Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. (1963–64 and alternate years: academic year—evening.)

121–22 *French Literature of the 17th Century* (3–3) Clubb
History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (1964–65 and alternate years.)

123–24 *French Literature of the 18th Century* (3–3)
History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

125–26 *French Literature of the 19th Century* (3–3) Frey
Romanticism and realism: fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years.)

127–28 *French Literature of the 20th Century* (3–3) Clubb
Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129–30 *Contemporary French Literature* (3–3) Clubb
Existentialism and surrealism in the novel, poetry, and drama from 1938 to the present. Lectures, discussions, and reports. (Summer 1963—French 130 (3).)

199–200 *Proseminar: Readings for the Major in French Literature* (3–3) Frey
Conferences and group discussions. (Academic year—as arranged.)

THIRD GROUP

201 *Doctoral Seminar* (3) Clubb
Introduction to the doctoral program. Methods of research and presentation in the Romance languages and literatures. (Not offered 1963–64.)

202 *History and Methods of Literary Analysis and Criticism* (3)
Literary criticism from Aristotle to the New Critics. Methods to be demonstrated and applied to selected passages from French literature. Emphasis on technique known as *explication de texte*. (Not offered 1963–64.)

203 *Problems of Pronunciation and Intonation* (3) Vignéras
(Fall—day.)

212 *Historical French Grammar* (3) Vignéras
Study of phonology, morphology, and syntax of Old French, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second group course in French literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Spring—day.)

* French 3-4 is required, and French 51–52 is recommended, as prerequisite to all second-group courses.

213–14 *Old French* (3–3) Vignéras
Survey of French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and the permission of the instructor. (Academic year—day.)

224 *Seminar: The Age of Rabelais* (3)
Humanism and the Reformation in French letters. Rabelais and the *conteurs*. Research projects, papers, reports. (1963–64 and alternate years: fall—day.)

225 *Seminar: The Age of Montaigne* (3)
Montaigne: the man and the development of his thought. The literature of the Religious Wars. Research projects, papers, reports. (1963–64 and alternate years: spring—day.)

226 *Seminar: French Poetry from Villon to Malherbe* (3) Frey
Theories and the practice of the art of poetry in the French Renaissance. The cultivation of a poetic language and the development of genres. Papers, reports. (1964–65 and alternate years: fall.)

227 *Seminar: The Renaissance in Europe* (3) Clubb
The sources and nature of literary trends in Western Europe from Dante to Calderón, and their relationship to French literature. Readings, papers, and discussion. (1964–65 and alternate years: fall.)

231–32 *Theater in the 17th Century* (3–3) Clubb
A survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121–22 or the equivalent. (1964–65 and alternate years: academic year.)

233 *Seminar: 17th Century Literary Doctrines* (3) Clubb
The origin and formation of literary doctrines and theories and their relationship to prose, poetry, and drama of the 17th century. Readings, discussions, and papers. (Offered 1964–65.)

234 *Nondramatic Literature of the 17th Century* (3) Clubb
Rationalism and the revolt against authority expressed in literature. Discussion of texts and collateral readings. (Fall—day.)

240 *The Sentimental Current in the 18th Century* (3)
Sentimentality in the novel and drama of 18th century France. English influences on French authors. The meaning of sentimentality and its later influences. (Offered 1964–65.)

241 *The Rationalistic Current in the 18th Century* (3)
Bayle, Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and the Encyclopedists as philosophers, dramatists, and critics of their age; an assessment of their contributions to the intellectual evolution of France and Europe. (Offered 1964–65.)

242 *Seminar: the French Novel in the 18th Century* (3)
Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Offered 1965–66.)

243 *Voltaire and Rousseau* (3) (Fall—day.)
Voltaire and Rousseau as representatives and critics of their age.

244 *Seminar: Diderot and the Encyclopedia* (3)
Diderot's contribution to 18th century novel, drama, and aesthetic criticism; the Encyclopedia as embodiment of 18th century thinking. (Spring—day.) Frey

250 *Romanticism in France* (3)
The theory and practice of romanticism in France: romantic love, the Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. Romantic criticism. The preparation for realism. (Offered 1965–66.)

251 *Realism and Naturalism* (3) **Frey**
Prose style in the French novel from Balzac to Zola; the influence of history, science, philosophy, and art on the literary doctrines of realism and naturalism; realistic currents with romanticism; the minor realists and naturalists; realism in poetry and in the theatre. (Offered 1965–66.)

252 *Seminar: Flaubert* (3) **Frey**
Reading and analysis of the works of Flaubert from *Mémoirs d'un fou* to *Bouvard et Pécuchet*, plus selected correspondence. Romantic elements in the works of Flaubert; Flaubert and the impersonality of the writer, the doctrine of art for art, Bovarysme, style indirect libre. Contemporary criticism of Flaubert. (Offered 1964–65.)

253 *Seminar: Symbolism in Poetry* (3) **Clubb**
The origin and nature of symbolism from Baudelaire to Valéry. Class analysis of texts and reports. Prerequisite: French 127–28 or the equivalent. (Offered 1964–65.)

254 *Seminar: Victor Hugo* (3) **Frey**
Hugo and the development of the romantic ideal in prose and poetry; Hugo and romantic theater and criticism. Analysis, classification, and criticism of romantic themes and techniques in the works of Hugo; contemporary Hugo criticism. (Offered 1964–65.)

255 *Seminar: Stendhal and Le Beylisme* (3) **Clubb**
Stendhal's novels and autobiographical works. Stendhal and his public. Readings, discussions, and papers. (Offered 1965–66.)

299–300 *Thesis* (3–3) **The Staff**
(Academic year—as arranged.)

SPANISH

FIRST GROUP

1–2 *First-year Spanish* (3–3) **The Staff**
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year Spanish** (3–3) **The Staff**
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. Prerequisite: Spanish 1–2 or two years of high school Spanish. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *Spanish Conversation and Composition* (3–3) **The Staff**
Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

49 *Spanish Readings for Nonmajor Students* (3) **The Staff**
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

51–52 *Survey of Spanish Literature and Civilization** (3–3) **Supervia**
The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

* Spanish 3–4 is required, and Spanish 51–52 is recommended, as prerequisite to all second-group courses in Spanish.

SECOND GROUP*

109–10 *Advanced Spanish Conversation and Composition* (3–3) Mazzeo
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: Spanish 10 or the equivalent and permission of the instructor. (Academic year—day.)

121–22 *Spanish Literature of the Golden Age* (3–3) Abrams
Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry, prose. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

123–24 *Cervantes: Don Quijote* (3–3) McSpadden
Life and works of Cervantes: the *Quijote* and its relationship to other works of the Golden Age. Lectures, discussions, and reports. (1964–65 and alternate years.)

125–26 *Modern Spanish Literature* (3–3) Mazzeo
Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years: academic year—day.)

127–28 *Contemporary Spanish Literature* (3–3) Supervía
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129 *The Romantic Drama in Spain* (3) Mazzeo
Class analysis of texts, collateral reading, and lectures on the Spanish Romantic Drama. (Summer 1964 and alternate summers.)

151–52 *The Spanish-American Novel* (3–3) Robb
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (1965–66 and every third year.)

155–56 *Spanish-American Literature to 1880* (3–3) Robb
The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (1963–64 and every third year: academic year—evening.)

157–58 *Spanish-American Literature since 1880* (3–3) Robb
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (1964–65 and every third year; summer 1963—Spanish 158 (3).)

197–98 *Proseminar: Readings for the Major in Spanish-American Literature* (3–3) Robb
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the Major in Spanish Literature* (3–3) Abrams
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

THIRD GROUP

201 *Doctoral Seminar* (3) The Staff
Introduction to the doctoral program, advanced study and methodology in the Romance languages and literatures. (Not offered 1963–64.)

202 *Explicación de textos* (3) Robb
An analytical introduction to the study of Spanish and Spanish-American literature. The method will be demonstrated and practiced on selected passages. (1964–65 and alternate years.)

* Spanish 3–4 is required, and Spanish 51–52 is recommended, as prerequisite to all second-group courses in Spanish.

212 *Historical Spanish Grammar* (3) McSpadden
Study of phonology, morphology, syntax, and lexicology of Old Spanish, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1965–66.)

214 *Old Spanish* (3) McSpadden
Literature and language: *El poema de Mío Cid, El Conde, Lucanor, El Libro de Buen Amor*, etc. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1964–65.)

221 *Seminar: Works of Cervantes* (3) McSpadden
Problems of composition, interpretation, criticism, literary history, and aesthetics. (Offered 1964–65.)

222 *Seminar: Spanish Mystics* (3)
A study of Spanish mysticism with particular attention to the poetry of Ramon Lull, Fray Luis de León, Santa Teresa, San Juan de la Cruz, and other mystics. (Offered 1964–65.)

223 *Seminar: Drama of the Golden Age* (3) Abrams
A study of the Spanish theater from its beginnings to Calderón. Reading and analysis of representative works of Lope, Tirso, Alarcón, Calderón, and the pre-Lopistas. (Offered 1964–65.)

224 *Seminar: the Renaissance in Spain* (3) Abrams
A study of the thought and literary currents that led to the Spanish Renaissance and its development. (Spring—day.)

225 *Seminar: Lyric Poetry of the Golden Age* (3) Supervía
A study of the principal lyric poets from Garcilaso. (Fall—day.)

226 *Seminar: Picaresque Novel* (3) Abrams
The Picaresque genre in Spain: origin and development and most recent manifestations. Reading and commentary on texts. (Offered 1965–66.)

227 *Seminar: Lope de Rueda* (3) Abrams
Origins of the Spanish popular theater. Influence of Plautus and the Italian theater on the art of Rueda. Popular language in the *pasos* and comedies of Rueda. Influence of Rueda on Cervantes. Explication of texts. (Fall—day.)

231 *Seminar: Spanish Writers of the 18th Century* (3) Mazzeo
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Offered 1965–66.)

241 *Seminar: Works of Galdós* (3) Supervía
Ideological and stylistic analysis; relationship of his works to the literary movements of the second half of the 19th century. (Offered 1964–65.)

242 *Seminar: Spanish Romanticism* (3) Mazzeo
Lectures and analysis of principal works and authors. Collateral readings. Problems of origins and developments. (Spring—day.)

244 *Seminar: the Spanish Novel of the 19th Century* (3) Mazzeo
A study of the leading Spanish novelists of the 19th century. Reading and analysis of important works. (Offered 1964–65.)

251 *Seminar: Works of Unamuno and Ortega y Gasset* (3) Supervía
A study of the thought of Unamuno and Ortega y Gasset; reading of texts and commentaries. (Offered 1965–66.)

252 *Seminar: Spanish Literature since the Civil War* (3) Supervía
A study of all literary currents in Spain since the Civil War: drama, prose, poetry. (Offered 1965–66.)

253 *Seminar: Modernismo* (3) Robb
A study of the genesis and development of Modernismo in Hispanic America and Spain with special attention to Spain. (Spring—day.)

261 *Seminar: Spanish-American Essayists* (3) Robb
The Spanish-American essay as an artistic form, studied in selected modern essayists such as Rodó, Ricardo Rojas, Vasconcelos, Arciniegas. (Fall—day.)

262 *Seminar: Contemporary Spanish-American Poetry* (3)
Studies of aesthetic principles and poetic movements. Emphasis on Huidobro, Neruda, and others. (Spring—day.) Robb

263 *Seminar: Contemporary Spanish-American Novelists* (3) Robb
Selected contemporary novelists such as Gallegos, Barrios, M. Rojas, J. R. Romero, Carlos Fuentes, Alejo Carpentier. (Offered 1964–65.)

264 *Seminar: Contemporary Spanish-American Short Story* (3) Robb
Twentieth Century *Cuentistas* from Quiroga to J. L. Borges, J. J. Arreola, and others (Offered 1964–65.)

266 *Seminar: Alfonso Reyes* (3) Robb
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Offered 1965–66.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) McSpadden
History; problems and methods of analysis in the physiological and acoustical branches of phonetics and intonation, their relationships, their application to the Romance languages, and oral aspects of the Romance literatures. (Spring—day.)

272 *Comparative Romance Languages and Literatures I (Italian)* (3)
Intensive study of Italian grammar with reference to French, Spanish, and other Romance languages. (1964–65 and alternate years.)

273 *Comparative Romance Languages and Literatures II (Italian)* (3) Clubb
For candidates for the degree of Doctor of Philosophy. The Italian language and literature from Dante to Goldoni. Lectures, discussions, exercises, and readings. Prerequisite: Romance 272 *Comparative Romance Languages and Literatures I* or the equivalent. (1964–65 and alternate years.)

275–76 *Comparative Romance Languages and Literatures III–IV (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Lectures, discussions, exercises, and readings. (Academic year—day.)

277–78 *Comparative Romance Languages and Literatures V–VI (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Portuguese and Brazilian literatures from Camões to the 20th century. (Offered 1964–65.)

279 *Introduction to Romance Philology and Linguistics* (3) McSpadden
Study of principles found in the development of the Romance languages and methods of analysis at the present time. A general course for graduate students in the fields of the Romance languages and literatures. Prerequisite: an elementary knowledge of Latin. This course is normally followed by French 212 or Spanish 212. (Offered 1965–66.)

280 *Introduction to Romance Stylistics* (3) **Frey**
Special emphasis will be placed on examples from French and Spanish literature. (Offered 1964–65.)

283 *Problems of Teaching Romance Languages and Literatures in College* (3) McSpadden
For candidates for the degree of Doctor of Philosophy. Principles and problems of learning and teaching the language and literature. Apprenticeship in college classes and the language laboratory. (Offered 1964–65.)

SECRETARIAL STUDIES*

Associate Professor Mildred Shott *(Chairman)*
Associates W. R. Throckmorton, Ruth Tyler

***Associate in Arts** (Two-year vocational curriculum in Secretarial Studies).*—For curriculum, see pages 72–73.

Associate in Secretarial Administration.—See the College of General Studies Catalogue for complete details.

Bachelor of Arts in Education with a teaching field in Business Education.—Prerequisite: the Education curriculum, page 69.
Required: the Business Education option and the professional courses listed in the School of Education Catalogue.

1 *Elementary Typewriting* (3) **Shott and Staff**
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $7. (Fall and spring—evening.)

2 *Intermediate Typewriting* (3) **Shott and Staff**
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $7. (Fall—evening; spring—day and evening.)

11 *Elementary Shorthand and Transcription* (3) Shott and Staff
A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $3. (Fall—day and evening.)

12 *Intermediate Shorthand and Transcription* (3) Shott and Staff
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, $5. (Spring—day and evening.)

15 *Advanced Shorthand, Typewriting, and Transcription* (3) Shott
Dictation and transcription involving vocabularies in specific businesses. *Minimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, $5. (Fall—day.)

* The Staff on Instruction is for the academic year 1962-63

16 *Secretarial Shorthand, Typewriting, and Transcription* (3) Shott
Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, $5. (Spring—day.)

51 *Business Correspondence* (3) Shott
Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature. (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

54 *Secretarial Practice* (3) Shott
A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships. (Spring—day.)

SLAVIC LANGUAGES AND LITERATURES*

Associate Professor Helen Yakobson *(Chairman)*
Assistant Professors G. A. Olkhovsky, Vadim Medish
Lecturers Kiril Jaszenko, M. I. Filipovitch-Nikatch, Victoria Sandor

Bachelor of Arts with a major in Russian (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67.

Required: in addition to the general requirements, pages 73–77, Slavic Languages 91–92 or 93–94, 179–80, and 161–62 or History 145–46, and eighteen semester hours to be selected from second-group courses in Russian.

Russian majors are expected to have a reasonable proficiency in spoken and written Russian, a firm grasp of the fundamentals of Russian grammar, a general comprehension of Russian culture and history, and a general knowledge of Russian literature, as well as some first-hand acquaintance with writings of major Russian writers. Students who are already proficient in Russian, may upon passing an appropriate examination, waive any or all of the first group language courses, as well as up to six hours of second group language courses.

Bachelor of Arts in Education with a major teaching field in Russian.—Prerequisite: the Education curriculum, page 69.

Required: the Russian option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

1–2 *First-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—evening. *Second half:* fall—evening; spring—day and evening.)

* The Staff of Instruction is for the academic year 1962–63.

9–10 *Russian Conversation* (3–3) The Staff
Listening comprehension and oral practice. Prerequisite: Russian 3–4 or permission of the instructor. Workshop fee, $6 a semester. (Academic year—evening.)

47 *Beginning Russian for Reading Examination Candidates* (0) The Staff
For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, $108. (Fall—evening.)

49 *Russian Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4 or 47 or the equivalent. (Spring—evening.)

91–92 *Introduction to Russian Literature* (3–3)
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion. (Academic year—day.)

93–94 *Introduction to Slavic (non-Russian) Literature* (3–3) Filipovitch-Nikatch
A survey of non-Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion. (Academic year—evening.)

SECOND GROUP

101–2 *Readings in Modern Russian* (3–3) Yakobson and Staff
Representative readings in the social sciences and Soviet periodical literature; study of current political terminology, abbreviations, and Soviet idiom. (1963–64 and alternate years: academic year—evening.)

103–4 *Scientific Russian* (3–3) The Staff
Readings in the major fields of Russian contemporary scientific literature. (1964–65 and alternate years.)

109–10 *Advanced Russian Conversation and Composition* (3–3) Yakobson
Developing proficiency in oral and written expression. (Academic year—evening; summer 1963.)

141–42 *Russian Literature of the 19th Century* (3–3) Yakobson
Lectures, special reports, class analysis of selected works of 19th century Russian literature—in Russian. (1964–65 and alternate years.)

151–52 *Russian Literature of the 20th Century* (3–3) Yakobson
Lectures, special reports, class analysis of selected works of 20th century Russian literature—in Russian. (Academic year—day.)

161–62 *Russian Culture* (3–3) Olkhovsky
A survey of Russian cultural heritage from the origins of ancient Russia to the present. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening.)

179–80 *Advanced Grammar and Composition for Russian Majors* (1–1) Yakobson
(Academic year—as arranged.)

*SOCIOLOGY AND ANTHROPOLOGY**

Professor H. L. Geisert
Associate Professors R. W. Stephens *(Acting Chairman)*, R. G. Brown
Assistant Professors J. M. Campbell, P. F. Gallagher
Lecturers Margaret Nelson, C. L. Perian, C. R. Nathan, Carmi Schooler

Bachelor of Arts with a major in Sociology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Anthropology 1 and Sociology 2, or the equivalent.

Required: in addition to the general requirements, pages 73–77, twenty-four semester hours in Sociology, which must include 148 and 149.

Bachelor of Arts with a major in Anthropology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Anthropology 1 and Sociology 2, or the equivalent.

Required: in addition to the general requirements, pages 73–77, twenty-four semester hours in Anthropology, which must include 192.

Master of Arts in the field of Sociology.—Prerequisite: the degree of Bachelor of Arts with a major in Sociology at this University or the equivalent.

Required: the requirements, pages 78–81. All courses must be approved in advance by the adviser.

Master of Arts in the field of Anthropology.—Prerequisite: the degree of Bachelor of Arts with a major in Anthropology from this University or the equivalent.

Required: the requirements, pages 78–81. All courses must be approved in advance by the adviser.

Master of Arts in the field of Linguistics.—See the departments of Germanic Languages and Literatures, page 246, and Romance Languages and Literatures, page 336.

SOCIOLOGY

FIRST GROUP

The Staff

2 *Man, Culture, and Society II*† (3)
(Formerly Sociology and Anthropology 1)
Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. (Fall and spring—day and evening; summer 1963.)

Nathan

41 *American Social Problems* (3)
(Formerly Sociology and Anthropology 2)
Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment. (1963–64 and alternate years: fall—day.)

SECOND GROUP

Nathan

120 *Aging in Modern Society* (3)
Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment; the social role of the aged. (1963–64 and alternate years: spring—day.)

* The Staff of Instruction is for the academic year 1962–63
† Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology

123 *Fields of Social Work* (3)
Introduction to the nature and scope of social work; the development of social work program; functions of social case work, social group work, and social action. (1963–64 and alternate years: fall—evening.)

124 *Medical Sociology* (3) Nathan
Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1964–65 and alternate years.)

126 *Urban Sociology* (3)
The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1963–64 and alternate years: spring—day.)

129 *Race and Minority Groups* (3)
Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1963–64 and alternate years: fall—day.)

130 *Social Stratification: Class and Status* (3) Nelson
(Formerly Sociology and Anthropology 161)
Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1964–65 and alternate years.)

131 *Social Institutions* (3)
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1964–65 and alternate years.)

132 *Courtship and Marriage* (3) Stephens
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling. (1963–64 and alternate years: spring—day.)

133 *The Family* (3) Stephens
Historical development of the family as a social institution, parent child relations, family problems, disorganization and divorce, and family reorganization. (1964–65 and alternate years; summer 1963.)

135 *Juvenile Delinquency* (3) Perian
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1964–65 and alternate years.)

136 *Criminology* (3) Perian
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1964–65 and alternate years.)

137 *Sociology of Law* (3)
The law as a social phenomenon and an agency of social control. Sociological analysis of particular problems of legal concepts, doctrine, and institutions. (1963–64 and alternate years: spring—evening.)

140 *Military Sociology* (3)
The study of the military establishment as one of the important institutions of modern society; an analysis of the distinctive forms of military organization; the social role of the professional military man. (1963–64 and alternate years: spring—evening.)

144 *Mass Communications* (3)
The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1964–65 and alternate years.)

146 *Industrial Sociology* (3) Stephens
Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale. (1964–65 and alternate years.)

147 *Sociology of Large Organizations* (3) Stephens
Sociological analysis of the structural characteristics of large complex organizations; individual accommodations to such organizations; the impact of the large organizational pattern on American social life. (1964–65 and alternate years.)

148 *Methods of Social Research* (3) Schooler
(Formerly Sociology and Anthropology 181)
Analysis of social research techniques and the scientific method; application to social data of the case study, social survey, statistical, sociometric, and experimental methods. (1963–64 and alternate years: fall—day.)

149 *Development of Social Theory* (3) Stephens
Systematic study of the important schools of sociological theory, both European and American developments; and evaluation of the scientific contributions of each school. (1963–64 and alternate years: spring—day.)

THIRD GROUP

221 *Seminar: Current Trends in Sociology* (3) Geisert
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (1964–65 and alternate years.)

225 *Seminar: Small Groups* (3)
General characteristics of small groups and their measurement; sociography of groups; evaluation of small group theory and sociometry; other techniques of small group research. (1963–64 and alternate years: fall—as arranged.)

226 *Problems of Underdeveloped Areas* (3) Geisert
Characteristics and problems of underdeveloped areas; the interrelationship of demographic, economic, social, and cultural factors; measures and techniques to introduce cultural changes. (1964–65 and alternate years; summer 1963.)

228 *Criminal Behavior: Research and Theory* (3) Geisert
A re-evaluation of theories of criminal and deviant behavior, based on recent research findings; implications for the correction and prevention of criminal behavior. (1964–65 and alternate years.)

235 *Social Movements* (3)
(Formerly Sociology and Anthropology 162)
Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and showing the way social movements develop. (1963–64 and alternate years: spring—as arranged.)

241 *Population Problems* (3)
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies; eugenics and birth control. (1964–65 and alternate years.) The Staff

295–96 *Research* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

ANTHROPOLOGY

FIRST GROUP

1 *Man, Culture, and Society I** (3) The Staff
(Formerly Sociology and Anthropology 51)
The physical evaluation of man and the origins and development of culture, including a survey of the topic divisions of the field. (Fall and spring—day and evening; summer 1963.)

SECOND GROUP

152 *Physical Anthropology* (3)
A survey of human biology. The mechanisms of speciation and the race process, including their cultural determinants. (1963–64 and alternate years: spring—evening.)

153 *Psychological Anthropology* (3) Gallagher
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (1963–64 and alternate years: fall—day; summer 1963.)

154 *Primitive Economics* (3) Gallagher
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non Western societies. (1963–64 and alternate years: spring—day.)

155 *Primitive Religion* (3) Campbell
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (1964–65 and alternate years.)

161 *Language and Culture* (3) Gallagher
(Formerly Sociology and Anthropology 143)
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (1963–64 and alternate years: fall—day.)

172 *Native People of the New World* (3) Gallagher
A survey of representative Indian groups of the Americas from primitive bands to high civilizations, stressing the patterned nature of diverse cultural responses to universal problems of human existence. (1963–64 and alternate years: spring—day.)

173 *Cultures of the Pacific* (3) Campbell
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1964–65 and alternate years.)

182 *New World Archeology* (3) Gallagher
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1963–64 and alternate years: spring—day.)

183 *Old World Archeology* (3) Campbell
A survey of the culture of history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1963–64 and alternate years: fall—day.)

192 *Anthropological Theory* (3) Campbell
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (1963–64 and alternate years: fall—evening.)

* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

193 *Anthropological Methods* (3) Campbell
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1964–65 and alternate years.)

THIRD GROUP

261 *Cultural Origins of the New World* (3) Campbell
(1963–64 and alternate years: fall—as arranged.)

262 *Applied Anthropology* (3) Gallagher
(Formerly Sociology and Anthropology 155)
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1964–65 and alternate years.)

263 *Culture, Contact, and Change* (3)
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (Not offered 1963–64.) Campbell

265 *Cultural Ecology* (3)
A cross-cultural examination of the relationship of technology to the natural world. (1964–65 and alternate years.) The Staff

285–86 *Research in Anthropology* (arr.)
(Academic year—as arranged; summer 1963.) The Staff

289–90 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following course for students in the War College programs of the College of General Studies.

263 *Culture, Contact, and Change* (3)

SPEECH *

Professors L. P. Leggette *(Chairman)*, C. W. Pettit *(Director of Speech Clinic)*, G. F. Henigan, Jr. *(Director of Forensics)*, E. L. Stevens
Professorial Lecturers Zelda Fichandler, Edna Monsees
Associate Professor Lee Bielski
Associate Professorial Lecturers Zelda Kosh, W. J. Elsen
Assistant Professor K. R. Sanders
Lecturers Edith Surrey, A. A. Nilles, S. L. Berlinsky, Edwin Shutts, H. C. Krebs, Lewis Shollenberger, Florence Lowndes
Associates Joan Regnell, Lois Richards, Ruth Cox

Bachelor of Arts with a major in Speech (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including Speech 1, 2, 11, 32.
Required: the general requirements, see pages 73–77, including the passing of a speech proficiency test early in the program; Speech 101, 121, 154, 171; and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

Bachelor of Arts with a major in Dramatic Art (Departmental).—Prerequisite: the Arts and Letters curriculum, page 67, including twelve hours in the basic courses in speech and six hours in English 51–52, 71–72, or 91–92.
Required: the general requirements, pages 73–77, including the passing of a speech proficiency test early in the program. Speech 101–2, a minimum of nine additional hours in theater arts in the Speech Department and nine hours in dramatic literature in the English Department, as approved by the adviser.

Master of Arts in the field of Speech Correction.—Prerequisite: the degree of Bachelor of Arts with a major in Speech from this University, or the equivalent.
Required: the general requirements, pages 78–81.

Master of Fine Arts in the field of Dramatic Art.—Prerequisite the degree of Bachelor of Arts from this University, or the equivalent.
Required: the general requirements, see pages 78–81, twelve hours of second- and third-group courses in drama and dramatic literature offered on campus, and twelve hours in theatre offered at the Arena Stage.
Four semesters in residence are required to complete this program. For detailed information, consult the Chairman of the Department.

Bachelor of Arts in Education with a teaching field in Speech.—Prerequisite: the Education curriculum, page 69.
Required: the Speech option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

A *Speech Clinic*
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4. (Academic year—as arranged; summer 1963.) Pettit, Bielski

B *American Speech for Foreign Students* (3)
Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5. (Fall and spring—day and evening; summer 1963.) Bielski

* The Staff of Instruction is for the academic year 1962-63

Leggette and Staff

1 *Effective Speaking* (3)
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2. (Fall and spring—day and evening; summer 1963.)

Henigan, Sanders

2 *Persuasive Speaking* (3)
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)

The Staff

11 *Voice and Diction* (3)
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4. (Fall and spring—day and evening; summer 1963.)

Leggette and Staff

32 *Oral Reading* (3)
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, $2. (Fall—day; spring—day and evening; summer 1963.)

SECOND GROUP

Bielski

101 *Voice and Phonetics* (3)
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, $4. (Fall—day; summer 1963.)

Leggette

102 *Oral Interpretation of Literature* (3)
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech 32. Recording fee, $2. (Spring—day.)

Elsen

111 *Effective Speech Communication* (3)
The tools and principles of effective speech communication, including practice in the organization, delivery, and the evaluation of presentations commonly encountered by professional personnel. Not open to speech majors. (Not offered 1963–64.)

Stevens

121 *Group Discussion and Conference Leadership* (3)
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. (Fall—day; spring—evening; summer 1963.)

Henigan

126 *Public Discussion and Debate* (3)
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor. (Spring—day.)

Henigan

127–28 *Advanced Debate Practice* (1–1)
Admission by permission of the instructor, after one semester of satisfactory participation in the intercollegiate debate program. This course may be repeated for a total of 4 semester hours. (Academic year—as arranged.)

Shollenberger

133–34 *Radio and TV Broadcasting* (3–3)
A study of the development of the radio and TV industries, station organization and management, equipment, production techniques; practice in the preparation and performance of radio programs. Recording fee, $5 a semester. (Academic year—evening.)

Henigan

141 *Public Speaking: Advanced Forms* (3)
The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Not offered 1963–64.)

145 *Speech Criticism* (3) Henigan
A study of rhetorical theory with application to the criticism of representative American and British oratory. Admission by permission of the instructor. (Spring—day.)

153 *Acting* (3) Leggette
Study and practice in the fundamentals of acting technique. Prerequisite: Speech 32. Laboratory fee, $5. (Fall—evening.)

154 *Play Production* (3) Leggette
Fundamentals of play production. Under the supervision of the instructor, students prepare one-act plays for presentation. Laboratory fee, $5. (Spring—evening.)

155-56 *Play Production Practice* (1–1) The Staff
Practical work in theater. (Academic year—as arranged.)

166 *History of the Theater* (3) Nilles
A general survey of the rise of the theater, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. (Not offered 1963-64.)

169 *Creative Dramatics* (3) Lowndes
A study of creative dramatics and its use as a learning tool. (Fall—evening.)

170 *Children's Theater* (3) Lowndes
Theory and practice in creating and producing plays for children. (Spring—evening.)

171 *Introduction to Speech Correction* (3) Pettit
A survey of the disorders of speech, including symptomatology, testing, causation, and therapy. (Fall—evening.)

174 *Speech Therapy* (3) Bielski
Clinical techniques and procedures involved in the correction of the disorders of speech. Prerequisite: Speech 101 and 171. (Spring—day.)

176 *Speech Correction* (3) Pettit
Advanced study of the disorders of speech. Prerequisite: Speech 171. (Spring—evening.)

177-78 *Clinical Practice in Speech Therapy* (1–1) The Staff
Supervised case work in remedial speech—the University Speech Clinic, Children's Hospital, District of Columbia Crippled Children's Society, and Public School system. Weekly meetings to discuss therapeutic techniques for the common speech problems. This course may be repeated for a total of 4 semester hours. Prerequisite: Speech 101, 171, 174, and permission of the instructor. (Academic year—as arranged; summer 1963.)

182 *Hearing Problems and the Testing of Hearing* (3) Shutts
A study of the field of audiology with emphasis on the testing of hearing. (Fall—evening.)

183, 84 *Clinical Practice in Hearing Therapy* (1–1) The Staff
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and Children's Hospital. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182 and permission of the instructor. (Academic year—as arranged; summer 1963.)

THIRD GROUP

251 *Rehearsal and Performance* (3) Arena Stage Staff
A course putting into practice the principles and techniques of acting through participation in play rehearsals and performances at the Arena Stage. Admission by audition or interview. (Fall and spring—as arranged.)

254 *Directing Problems* (3) Arena Stage Staff
Observation and participation in solving the problems involved in directing plays. Admission by interview. (Fall and spring—as arranged.)

255 *Techniques of Staging* (3) Arena Stage Staff
Application of theory and principles of scene design, costuming, lighting, make-up, and related stage techniques. Admission by interview. (Fall and spring—as arranged.)

263 *Theater Management* (3) Arena Stage Staff
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged.)

264 *Producing Problems* (3) Arena Stage Staff
Problems involved in producing community and professional theater. Admission by interview. (Fall and spring—as arranged.)

279 *Speech Science* (3) Berlinsky
The anatomy, physiology, physics, and psychology of speech production, with a survey of experimental work. (Not offered 1963–64.)

280 *Speech Pathology* (3) Pettit
An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Prerequisite: Speech 171 and 176. (Fall—day.)

284 *Speech Reading and Auditory Training* (3) Shutts
Theory and practice in speech reading and auditory training with an analysis of methods used for the instruction of hearing handicapped children and adults. Prerequisite: Speech 182. (Spring—evening.)

285 *Childhood Aphasia* (4) Monsees
Designed to acquaint speech therapists and teachers of exceptional children with the Association Method of rehabilitation; background lectures dealing with neurological, psychological, and psychiatric aspects of language disorders in children; current theories and practices in therapy. Observation and clinical practice with classes of aphasic children at the Children's Hospital School for Aphasic Children. Prerequisite: undergraduate degree in speech and hearing, special education, or allied fields. (Summer 1963.) Pettit

286 *Seminar in Speech Pathology* (3) The Staff
(Spring—evening.)

294 *Research in Dramatic Art* (arr.) The Staff
(Spring—as arranged.)

295–96 *Research in Speech and Hearing* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3)
(Academic year—as arranged.)

COURSE OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses the University offers the following course, which is available to personnel in the U. S. Navy and Marine Corps.

111 *Effective Speech Communication* (3)

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)

English 125, *Introduction to English Linguistics* (3)

English 135–36, *Shakespeare* (3–3)
English 175–76, *American Drama* (3–3)
English 183–84, *The English Drama* (3–3)
English 235–36, *Studies in Shakespeare and His Contemporaries* (3–3)
Education 134, *Student Teaching in Secondary Schools* (6 to 9)
Education 137, *Teaching Speech* (2 to 4)
Psychology 115, *Psychology of Language and Communication* (3)

STATISTICS *

Professors E. H. Johnson, H. F. Bright *(Chairman)*, Solomon Kullback
Professorial Lecturer Samuel Greenhouse
Associate Professorial Lecturers Seymour Geisser, Morton Kupperman, Arnold Heyl
Assistant Professor R. E. Thomas
Lecturers S. J. Armore, Fred Frishman, W. M. Wolman

Bachelor of Arts or *Bachelor of Science with a major in Mathematical Statistics (Field of Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67–68, including Mathematics 23 or former 30; Statistics 91.
Required: the general requirements, pages 73–77, including Mathematics 24; Statistics 117, 118, 155, 157–58, and six additional hours of second-group Statistics courses selected with the approval of the adviser; a minimum of twenty-four semester hours of courses in other departments approved by the adviser as contributing to a well-organized program; and the grade of "pass" on the major examination at the end of the senior year. For further details, consult the adviser.

Master of Arts or *Master of Science in the field of Mathematical Statistics.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematical Statistics at this University, or the equivalent.
Required: the general requirements, pages 78–81, including a thesis in Statistics and at least twelve hours to be selected from approved third-group courses in Statistics. The remaining twelve hours must be selected in consultation with the adviser.

Doctor of Philosophy.—See pages 83–90.

Bachelor of Business Administration or *Master of Arts in Government with a major in Business and Economic Statistics.*—See pages 149–51, 156–57, 157–59, 161.

FIRST GROUP†

51 *Introduction to Business and Economic Statistics* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening; summer 1963.)

* The Staff of Instruction is for the academic year 1962–63.
† Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 58 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

52 *Mathematics of Finance* (3) The Staff
Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day and evening.)

53 *Introduction to Statistics in Psychology and Education* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening.)

91 *Principles of Statistical Methods** (3) The Staff
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall—evening; spring—day.)

SECOND GROUP

104 *Statistics in Psychology and Education* (3) Bright
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education. Laboratory fee, $9. (Fall—Saturday morning; summer 1963.)

105 *Statistics in Psychology and Education* (3) Bright
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, $9. (Spring—Saturday morning; summer 1963.)

106 *Factor Analysis* (3)
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, $9. (Fall—evening.) The Staff

107 *Statistics for Engineers* (3)
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1963.)

110 *Quality Control Techniques* (3)
Applications of probability and distribution theory to industrial control problems; use of quality control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1964–65 and alternate years.)

111 *Business and Economic Statistics I* (3) Johnson
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)

112 *Business and Economic Statistics II* (3) Johnson
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, su-

* Statistics 91 is for Statistics majors, for students in engineering and in the biological and physical sciences

ply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)

117 *Analysis of Variance I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, $9. (Fall—evening; summer 1963.)

118 *Correlation and the Chi-square Test I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, $9. (Spring—evening.)

122 *Forecasting Principles and Techniques* (3) Johnson
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)

123 *Introduction to Econometrics* (3) Johnson
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)

155 *Introduction to Mathematical Probability* (3) The Staff
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening; summer 1963.)

157–58 *Mathematical Statistics* (3–3) Kupperman
Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)

187 *Theory of Sampling* (3) Bright
Problems of sampling and sample design. Admission by permission of the instructor. (Fall—evening.)

188 *Nonparametric Statistical Inference* (3) Bright
Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (Spring—evening.)

189–90 *Mathematical Probability and Applications* (3–3) Geisser
Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)

193 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Spring—evening.)

194 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of complex variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Fall—evening.)

195–96 *Reading and Research in Statistics* (arr.) The Staff
(Academic year—as arranged.)

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3) The Staff
In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor. (Not offered 1963–64.)

THIRD GROUP*

207–8 *Operations Analysis* (3–3) Bright
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. Admission by permission of the instructor. (1964–65 and alternate years.)

217–18 *Experimental Design* (3–3)
Advanced theory of the applications of the linear and other hypotheses to experimental design. (Academic year—evening.)

257–58 *Advanced Mathematical Statistics I* (3–3) Greenhouse
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Academic year—evening.)

259–60 *Advanced Mathematical Probability* (3–3) Kullback
Modern theories and asymptotic laws: elementary theory of definite integration; limit theorems in probability. (Academic year—evening.)

261–62 *Information Theory for Engineers* (3–3)
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure-theoretic). Measures of information, entropy, and their properties. Discrete stochastic sources, message ensembles. The transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1964–65 and alternate years.)

263–64 *Advanced Mathematical Statistics II* (3–3) Kupperman
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Academic year—evening.)

265–66 *Multivariate Analysis* (3–3) Geisser
A year course, credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)

267–68 *Characteristic Functions* (3–3)
A year course, credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1964–65 and alternate years.)

269 *Sequential Testing* (3)
(1964–65 and every third year.)

270 *Statistical Decision Theory* (3) Kullback
(1964–65 and every third year.)

271–72 *Statistical Information Theory* (3–3)
A year course, credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses

of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison or experiments. (Academic year—evening.)

273–74 *Stochastic Processes* (3–3) Kullback

A year course, credit is not given for the first half until the second half is completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff

Admission by permission of the instructor. (Academic year—as arranged.)

297 *Seminar: Problems in Mathematical Statistics* (3)

(1963–64—as arranged.)

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, Engineering Administration, and Health Care Administration.

101–2 *Basic Principles of Statistical Methods* (3–3)

Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.

119 *The Bases of Statistical Decision Making* (arr.)

Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3)

Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses.

250 *Managerial Statistics and Quality Control* (3)

The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization. Prerequisite: Statistics 107 or the equivalent.

SURGERY *

Professors Brian Blades *(Chairman)*, C. T. Klopp
Clinical Professors W. S. McCune, V. M. Iovine, Alec Horwitz, G. A. Higgins, Jr., J. P. Adams, G. S. Letterman
Associate Professors P. C. Adkins, H. C. Pierpont
Associate Clinical Professors H. L. Feffer, J. R. Thistlethwaite, Don Wenger
Assistant Professors N. P. D. Smyth, T. C. Alford
Assistant Clinical Professors B. F. Dean, Jr., J. S. Neviaser, J. B. Harrell, L. T. Peterson, Thomas Bradley, Murdock Head, R. G. Kindred, Ernest Brav
Associates W. R. Morris, J. J. Weinstein, W. C. Meloy, K. H. Wood, Isabella Harrison, Maxine Schurter, Charles Keck
Instructors E. H. Izawa, Takeo Tsunekawa
Clinical Instructors C. D. Briggs, J. F. Conlon, D. C. Richtmeyer, Leon Gerber, E. A. Gould, A. B. Rohrbaugh, Jr., M. H. Kendrick, B. G. Brown, J. D. Hoyle, R. R. Smith, N. H. Isaacson, C. S. White, Jr., D. P. McCarty, J. M. Keshishian, R. L. Dow, L. R. Perna, T. M. Wright, D. C. Wherry, J. H. Sager, Frances Brennecke, J. P. Baker, J. W. Canter, R. E. Hughes, H. E. Lane, Jr.

284 *Surgical Physiology* The Staff
A clinical and laboratory course with particular emphasis on applied physiology. (Spring—2 hours a week.)

323–24 *Surgical Pathology I* Weiss
Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing surgical specimens. (Academic year—1 hour a week.)

373–74 *Clinical Clerkship I* The Staff
The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital. (Academic year—as arranged.)

375–76 *Outpatient Surgical Clinic* The Staff
Surgical clinic. D. C. General Hospital. (Forty hours as arranged during academic year.)

377 *Fractures and Orthopedics* The Staff
Lectures covering the field of fractures and orthopedics. D. C. General Hospital. (Fall—1 hour a week.)

379–80 *Lectures in Surgery* Blades
D. C. General Hospital. (Academic year—2 hours a week.)

383–84 *Surgical Clinic* The Staff
Demonstration of various surgical diseases to the entire class. University Hospital. (Academic year—1 hour a week.)

473–74 *Clinical Clerkship II* The Staff
Six weeks, University Hospital; three weeks, Mt. Alto Hospital. (Academic year—in rotation.)

479–80 *Surgical Staff Conferences* Blades
University Hospital. (Academic year—W as arranged.)

483–84 *Surgical Ward Rounds* Blades
Demonstration of various surgical diseases to fourth-year clerks. University Hospital. (Academic year—1 hour a week.)

* The Staff of Instruction is for the academic year 1962-63

491 *Surgical Anatomy II* — Horwitz and Staff
Lectures for fourth-year clerks. University Hospital. (Fall—1 hour a week for twelve weeks in rotation.)

492 *Surgical Pathology II* — Newman
A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically. (Spring—1 hour a week.)

UROLOGY *

Clinical Professors L. R. Culbertson *(Chairman)*, E. E. Ferguson
Associate Clinical Professor W. D. Jarman
Assistant Clinical Professors F. T. Reuter, Gilbert Ottenberg
Associates G. R. MacDonald, H. A. Goldberg
Clinical Instructors H. D. Wolff, Jr., H. P. Dorman, W. D. Oldham, John Kenealy, F. P. Chiaramonte, Gyorgy Dudas-Gyorki, H. J. Klapproth, R. C. Rhame, R. E. Ware

395–96 *Clinic* — The Staff
Clinical teaching and demonstrations on the care of urological patients with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital.

397 *Urology* — The Staff
Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology. (Fall—1 hour a week.)

495–96 *Clinic* — The Staff
Clinical demonstrations, teaching in the Outpatient Department, and urological X ray conferences, with special attention given to diagnostic procedures. University Hospital. (Three hours a week, in rotation, as arranged during academic year.)

* The Staff of Instruction is for the academic year 1962–63.

ZOOLOGY *

Professors I. B. Hansen *(Chairman)*, Edith Mortensen, S. C. Munson
Professorial Lecturer K. C. Kates
Associate Professor A. H. Desmond
Lecturer J. R. Buchheit

Bachelor of Arts or *Bachelor of Science (Field-of-Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67-68, including Biology 1-2 and Chemistry 11-12.

Required: the general requirements, pages 73–77, and the grade "pass" on the Zoology major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) classification, structure, and ecological relations of animals, both invertebrate and vertebrate; (2) embryological development and life histories of important animal types; (3) general principles of physiology, heredity, and evolution; (4) the development of biological principles, hypotheses, and theories as revealed in the study of the history of zoology.

Bachelor of Arts or *Bachelor of Science with a major in Biology (Departmental).*—This interdepartmental major may be arranged in conjunction with the Department of Botany. Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 67-68, including Biology 1–2†, or the equivalent.

Required: in addition to the general requirements, pages 73–77, a minimum of twenty-four semester hours of second group courses which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Master of Arts or *Master of Science in the field of Zoology.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Zoology or Biology.

Required: the general requirements, pages 78–81.

Master of Arts or *Master of Science in the field of Biology.*—This interdepartmental field may be arranged in conjunction with the Department of Botany. Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Zoology, Botany, or Biology.

Required: the general requirements, pages 78–81.

Doctor of Philosophy (in a field of Zoology or Biology).—See pages 83–90.

Bachelor of Arts in Education with a teaching field in Biology.—Prerequisite: the Education curriculum, page 69.

Required: the Biology option and the professional courses listed in the School of Education Catalogue.

BIOLOGY‡

FIRST GROUP

1-2 *Introductory Biology*†‡ (4-4) The Staff

An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2

* The Staff of Instruction is for the academic year 1962-63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.
‡ Biology 1-2 is prerequisite to all second-group courses in Zoology, except by permission of the instructor.

at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences* (4): fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences* (4): fall and spring—day and evening; summer 1963.)

ZOOLOGY

SECOND GROUP

101–2 *Invertebrate Zoology* (3–3) Mortensen

Lecture (1 hour), laboratory (4 hours). A systematic study of invertebrate forms, including the morphology, classifications, life histories, and phylogenetic relationships. Material fee, $8 a semester. (1963–64 and 1964–65: academic year—day; 1965–66: academic year—evening.

103–4 *Comparative Vertebrate Anatomy* (3–3)

Lecture (1 hour), laboratory (4 hours). Lectures on the organ systems of the vertebrates, laboratory dissections of types. Material fee, $11 a semester. (1963–64: academic year—day; 1964–65: academic year—day and evening.)

108 *Organic Evolution** (3) Munson

Theories of organic evolution and present ideas on the principle lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: academic year—day; 1964–65: academic year—evening.)

115–16 *Cytology** (3–3) Desmond

Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

127 *Genetics** (3) Stewart

A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

140 *Cell Physiology** (3) Shropshire

The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

145 *Introduction to Vertebrate Embryology* (3) Hansen

Lecture (1 hour), laboratory (4 hours). Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, $11. (1963–64 and alternate years: fall—day and evening; 1964–65 and alternate years: fall—day.)

148 *Histology* (3) Desmond

Lecture (1 hour), laboratory (4 hours). Introduction to the microscopical anatomy of normal tissues and organs. Material fee, $11. (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day; summer 1963.)

152 *Protozoa* (3) Mortensen

Lecture (1 hour), laboratory (4 hours). Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Material fee, $8. (1963–64 and alternate years: spring—evening.)

155 *Parasitology* (3) Kates

Lecture (1 hour), laboratory (4 hours). An introduction to the study of animal parasitology, with a survey of parasitic types from the protozoa through arthropoda. Material fee, $11. (1963–64 and alternate years: fall—evening.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

161 *Entomology* (3) Munson
Lecture (1 hour), laboratory (4 hours). A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Material fee, $8. (1963–64 and alternate years: fall—evening.)

162 *Insect Physiology* (3) Munson
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, $11. (1963–64 and alternate years: spring—evening.)

171–72 *Special Problems* (3–3) The Staff
Written approval of the instructor is required. Material fee, $11 a semester. (Academic year—as arranged.)

199–200 *Proseminar* (3–3) The Staff
Designed to correlate and supplement the work of Zoology majors. (Academic year—day and evening.)

THIRD GROUP

201–2 *Seminar: Cytology** (3–3)
A study of the current literature in experimental cytology. (Not offered 1963–64.)

204 *Seminar in Invertebrate Zoology* (3) Mortensen
A study of original publications on hormones of invertebrate animals. (1964–65 and alternate years.)

214 *Advanced Invertebrate Zoology* (3) Mortensen
Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 101–2 or the equivalent. Material fee, $8. (Not offered 1963–64.)

247–48 *Morphogenesis* (3–3) Hansen
Lectures and class reports on experimental morphology. Prerequisite: Zoology 103–4 or the equivalent. (1964–65 and alternate years.)

251 *Seminar in Vertebrate Zoology* (3) Desmond
A study of current publications in the field of histophysiology. (1963–64 and alternate years: fall—evening.)

295–96 *Research* (arr.) The Staff
Investigation of special problems. (Academic year—as arranged; summer 1963—Zoology 295 (3).)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963—Zoology 299 (3).)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

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Charles Berns, A.M., LL.B., *Professorial Lecturer in Business Administration*
Marcella Bernstein, A.M., *Lecturer in Education*
Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*
Christopher Theodore Bever, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
Lewis Henry Biben, M.D., *Clinical Instructor in Medicine*
Lee Sheward Bielski, A.M., *Associate Professor of Speech*
Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*
Catharine Birch, A.B., M.D., *Assistant Clinical Professor of Otolaryngology*
Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans Education*
Sven Petter Bjorklund, M.S., *Assistant Professor of Physics*
Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*
Brian Blades, A.B., M.D., *Lewis Saltz Professor of Surgery*
Jerome Bernard Block, A.B., M.D., *Associate in Physiology*
Joseph Blum, Ph.D., *Associate Professorial Lecturer in Mathematics*
Baruch Samuel Blumberg, M.D., D.Phil. (Oxon.), *Associate Professorial Lecturer in Anatomy*
Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Medicine*
Francis Armstrong Board, B.S., M.D., *Associate in Psychiatry*
Roland Richard Bonato, Ph.D., *Assistant Research Professor of Psychology*
Robert John Bond, A.B., *Lecturer in Business Administration*
Eleanore Hodgson Bookout, A.B., M.F.A., *Studio Lecturer in Art (Ceramics)*
Tamis Wilson Borden, A.B., *Administrative Secretary of the University*
John Gordon Boswell, A.M. in Ed., *Assistant Professor of Education*
John Henry Bouma, A.B., M.D., *Clinical Instructor in Psychiatry*
Maxwell Boverman, A.B., M.D., *Clinical Instructor in Psychiatry*
Jerome Bracken, M.E.A., *Lecturer in Business Administration*
Thomas Bradley, A.B., M.D., *Assistant Clinical Professor of Surgery*
Edward Howard Braun, A.M., *Assistant Professor of Engineering and Applied Science*
Ernest Brav, M.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
James Thomas Brennan, A.B., M.D., *Assistant Clinical Professor of Radiology*
Frances Elizabeth Brennecke, A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
Alexander Breslow, M.S., M.D., *Assistant Professor of Pathology*

*JOHN WITHROW BREWER, Ph.D., *Professor of International Law*
CRENSHAW DOUGLAS BRIGGS, B.S., M.D., *Clinical Instructor in Surgery*
ALICE BRIGHAM, A.B., M.D., *Associate in Medicine*
ALBERT SEYMOUR BRIGHT, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
HAROLD FREDERICK BRIGHT, Ph.D., *Professor of Statistics*
ALFRED BRIGULIO, M.D., *Associate Clinical Professor of Medicine; Associate University Physician*
WARREN DANIEL BRILL, B.S., M.D., *Assistant Clinical Professor of Medicine*
FOREST CARLYLE BRIMACOMBE, M.B.A., *Professorial Lecturer in Accounting*
CLIFFORD JOHN BRINKMAN, A.B., *Lecturer in Business Administration*
BERNARD BERYL BRODIE, Ph.D., *Professorial Lecturer in Pharmacology*
BERTRAM BROWN, A.B., M.D., *Clinical Instructor in Psychiatry*
BROOKS GIDEON BROWN, M.D., *Clinical Instructor in Surgery*
CRAWFORD SOUTHWELL BROWN, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*
DAVID SPRINGER BROWN, Ph.D., *Professor of Public Administration*
HALLA BROWN, M.D., *Associate Clinical Professor of Medicine*
JAMES GRADY BROWN, A.M., Ed.D., *Associate Professor of Business Administration; Director, Off-Campus Division, College of General Studies*
JOHN ANTHONY BROWN, JR., A.M., L.H.D., LL.D., *Vice President for Plans and Resources*
KENNETH BROWN, Ph.D., *Professorial Lecturer in Education*
RAYMOND NATHAN BROWN, M.D., *Clinical Instructor in Anatomy*
ROBERT GUY BROWN, Ph.D., *Associate Professor of Sociology*
THOMAS HAYWARD BROWN, *Associate Professorial Lecturer in Law*
THOMAS MCPHERSON BROWN, A.B., M.D., *Eugene Meyer Professor of Medicine*
HENRY GASSON BRYAN, A.B., M.D., *Clinical Instructor in Dermatology and Syphilology*
GEORGE CUMMING BUCHANAN, A.B., M.D., *Clinical Instructor in Medicine*
JOHN ROBERT BUCHHEIT, M.S., *Lecturer in Zoology*
JAMES LEONARD BUCKLER, A.M., *Professorial Lecturer in Accounting*
DEXTER MEANS BULLARD, Ph.B., M.D., *Clinical Professor of Psychiatry*
MAURICE BENJAMIN BURG, A.B., M.D., *Associate in Physiology*
LLOYD BYRON BURK, JR., A.B., M.D., *Assistant Clinical Professor of Surgery*
ARTHUR EDWARD BURNS, Ph.D., *Professor of Economics; Dean of the Graduate Council*
JAMES THEODORE BURNS, M.D., *Associate in Medicine*
BOYD LEE BURRIS, B.S., M.D., *Clinical Instructor in Psychiatry*
ELIZABETH BURTNER, A.M., *Professor of Physical Education for Women*
STEWART WILLIAM BUSH, B.S., M.D., *Associate Professor of Medicine*
ROBERT NEIL BUTLER, A.B., M.D., *Associate in Psychiatry*
NAN SOUTHEY BYRD, B.S., *Instructor in Physical Education for Women*
CESAR AUGUSTO CACERES, B.S., M.D., *Assistant Clinical Professor of Medicine*
PAUL CALABRESI, Ph.D. (Cantab.), *Professor of Anatomy*
JUAN CALATAYUD, M.D., *Assistant Professor of Medicine*
WILLARD EDMUND CALDWELL, Ph.D., *Associate Professor of Psychology*
DWIGHT CALLAGAN, B.S., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
MARGARET ELIZABETH CALLAN, A.B., M.D., *Associate University Physician*

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* On sabbatical leave spring semester 1963–64.

Dale Corbin Cameron, A.B., M.D., M.P.H., *Clinical Professor of Psychiatry*
John Lansing Cameron, A.M., *Associate Professorial Lecturer in Education*
James Vernon Camp, A.M., *Associate in Physical Education for Men*
John Martin Campbell, Ph.D., *Associate Professor of Sociology and Anthropology*
Robert Dale Campbell, Ph.D., *Professor of Geography*
Jerome Wolf Canter, A.B., M.D., *Clinical Instructor in Surgery*
Gerald Vincent Carroll, Ph.D., *Associate Professor of Geology*
Thomas Henry Carroll, B.S., M.B.A., D.C.S., LL.D., *Professor of Economic Development and Administration; President of the University*
Thomas Patrick Carroll, Jr., B.C.E., *Instructor in Engineering and Applied Science*
Wesley Thomas Carroll, Ph.D., *Professor of Education*
William Robert Carroll, Ph.D., *Professorial Lecturer on Proteins*
George Davis Cary, B.S., LL.B., LL.M., *Associate Professorial Lecturer in Law*
Richard Bernard Castell, A.B., M.D., *Assistant Clinical Professor of Medicine; Director of Health Services; University Physician*
Henry Marcellus Cathey, Ph.D., *Associate Professorial Lecturer on Plant Physiology*
William Paxson Chalfant, Jr., M.D., *Assistant Clinical Professor of Ophthalmology*
Burton Bryant Chandler, B.S., M.B.A., *Assistant Professor of Business Administration*
Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
George Allyn Chapman, B.S., M.D., *Associate in Medicine*
Richard Allen Chase, A.B., M.D., *Clinical Instructor in Neurology*
Jacob Bernard Chassan, Ph.D., *Assistant Clinical Professor of Psychiatry (Biostatistics)*
Francis Paul Chiaramonte, A.B., M.P.H., M.D., *Clinical Instructor in Urology*
Paul Chodoff, A.B., M.D., *Associate Clinical Professor of Psychiatry*
Charles Louis Christ, Ph.D., *Professorial Lecturer in Geology*
John Bert Christensen, Ph.D., *Assistant Professor of Anatomy*
Francis Chucker, M.D., *Clinical Instructor in Medicine*
Lloyd Eugene Church, D.D.S., Ph.D., *Lecturer in Anatomy*
Dorothy Rockwell Clark, A.B., *Instructor in English Composition*
Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*
Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*
John Clayton, Ph.D., *Associate Research Professor of Business Administration*
Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*
James Clifford, M.D., *Clinical Instructor in Medicine*
Thomas Akroyd Clingan, Jr., B.S., J.D., *Visiting Assistant Professor of Law*
Daniel Raymond Cloutier, M.P.A., Ph.D., *Associate Professor of Public Administration*
Louise George Clubb, Ph.D., *Assistant Professor of English*
William Graham Clubb, Ph.D., *Professor of French*
Robert Norwood Coakley, M.D., *Professor of Anesthesiology*
James Harold Coberly, B.S., M.D., *Associate in Medicine*
George Joel Cohen, Ph.D., *Professor of American Literature*
Manuel Frederick Cohen, M.D., *Associate in Pediatrics*
Sheldon Stanley Cohen, B.S., LL.B., *Professorial Lecturer in Law*
Howard David Cohn, A.B., J.D., *Associate Professorial Lecturer in Law*
Victor Hugo Cohn, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Victor Hugo Cohn, Jr., Ph.D., *Assistant Professor of Pharmacology*

OSWALD SYMISTER COLCLOUGH, B.S., LL.B., LL.D., Sc.D., *Professor of Law; Provost and Dean of Faculties*

CHARLES WILLIAM COLE, Ph.D., *Professor of American Literature; Dean of the Summer Sessions*

ALLAN BERTRAM COLEMAN, M.D., *Assistant Clinical Professor of Pediatrics*

MARY ELLEN COLEMAN, A.M., *Associate Professor of Education; Director of the Reading Clinic*

LEONARD CORNELIUS COLLINS, A.B., LL.M., *Professorial Lecturer in Business Administration*

GERHARD COLM, Dr. rer. pol., *Professorial Lecturer in Economics*

JOSEPH GEOFFREY COLMEN, Ph.D., *Associate Professorial Lecturer in Psychology*

ROBERT RUDOLPH COLUMBUS, Ph.D., *Assistant Professor of English Literature*

WILLIAM JOHN CONDELL, JR., Ph.D., *Lecturer in Physics*

JOSEPH FRANCIS CONLON, D.D.S., *Clinical Instructor in Dental Surgery*

PAUL WILLARD CONNER, A.M., *Assistant Professor of Political Science*

AUDREY CONNOR, A.B., M.D., *Clinical Instructor in Medicine*

CHARLES BARRIE COOK, B.S., M.D., *Associate in Pathology*

CHARLES DAVID COOPER, A.B., M.D., *Associate in Medicine*

FRANKLIN DERO COOPER, M.S., *Associate Professor of Hospital Pharmacy*

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HOWARD LEE COPPENBARGER, *Associate Professorial Lecturer in Journalism*

PAUL ARTHUR CRAFTON, Ph.D., *Professor of Engineering and Applied Science*

LOUIS ALECK CRAIG, JR., A.B., M.D., *Associate in Medicine*

RICHARD GRIFFIN CRAWFORD, A.B., *Associate in Latin*

KATHLEEN CRIDDLE, A.B., B.F.A., *Instructor in Physical Education for Women*

ELIZABETH AMANDA CRISP, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

JEREMIAH KEITH CROMER, M.D., *Associate Clinical Professor of Obstetrics and Gynecology*

ROBERT EMMET CRONIN, M.S., *Associate Professor of Engineering and Applied Science*

JACK CROWELL, B.S., M.D., *Associate in Medicine*

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LEON RICHARD CULBERTSON, B.S., M.D., *Clinical Professor of Urology*

JAMES ALBERT CUNNINGHAM, B.S., *Lecturer in Engineering*

HARRISON EVERETT CURTIS, B.S., M.D., *Assistant Professor of Anesthesiology*

GORDON WALFORD DAISLEY, JR., A.B., M.D., *Clinical Instructor in Pediatrics*

ABRAHAM WOLFFE DANISH, A.B., M.D., *Associate in Medicine*

DWIGHT DAVID DARLAND, A.M., Ed.D., *Professorial Lecturer in Education*

DAVID STANLEY DAVIS, A.B., M.D., *Associate in Medicine*

JOHN TAIT DAVIS, Ph.D., *Associate Professor of Geography*

LEE WASHINGTON DAVIS, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

RICHARD LAVERN DAVIS, A.B., M.D., *Clinical Instructor in Pathology*

*WILLIAM COLUMBUS DAVIS, Ph.D., *Professor of Latin American History*

WILLIAM JOSEPH GRAHAM DAVIS, A.B., M.D., *Assistant Clinical Professor of Ophthalmology*

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* On leave of absence 1963–64.

CLARKE DAVISON, Ph.D., *Associate Professor of Pharmacology*
JAMES FORRESTER DAVISON, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
RODERIC HOLLETT DAVISON, Ph.D., *Professor of European History*
ROBERT DAY, A.B., M.D., *Assistant Clinical Professor of Ophthalmology*
EDWIN JUSTIN DEALY, A.B., M.D., *Clinical Instructor in Anesthesiology*
BENJAMIN FRANKLIN DEAN, JR., M.D., M.S., *University Surgeon*
VINCENT JAMES DEANGELIS, B.S. in P.E., A.M. in Ed., *Professor of Physical Education for Men*
LYLE CONWAY DEARDEN, Ph.D., *Associate Professorial Lecturer in Anatomy*
STEPHEN WILLIAM DEJTER, A.B., M.D., *Clinical Instructor in Medicine*
ANATOLE STEPHEN DEKABAN, M.D., Ph.D., *Assistant Clinical Professor of Neurology*
FERNAND VINCENT DEMARET, M.S., *Professorial Lecturer in Accounting*
DERMOT JOSEPH DEMIS, Ph.D., M.D., *Associate in Dermatology and Syphilology*
FRANK LANDT DENNIS, A.B., LL.B., *Lecturer in Journalism*
LOUIS DE PIAN, Ph.D., *Professor of Applied Science*
ALTON HAROLD DESMOND, Ph.D., *Professor of Zoology*
HARRY GRUBB DETWILER, Ed.D., *Associate Professor of Education*
MARGARET GARRITSEN DEVRIES, Ph.D., *Professorial Lecturer in Economics*
DANIEL DEYKIN, A.B., M.D., *Clinical Instructor in Medicine*
HERBERT HAROLD DIAMOND, M.D., *Clinical Instructor in Pediatrics*
FRIEDRICH PAUL JULIUS DIECKE, Dr. rer. nat., *Associate Professor of Physiology*
OSCAR CHARLES DISLER, A.M., *Associate Professorial Lecturer in Accounting*
ROBERT GALLOWAY DIXON, JR., Ph.D., LL.B., *Professor of Law*
*JAMES CARLTON DOCKERAY, Ph.D., *Professor of Finance; Coordinator, Programs in Business Administration*
LLOYD EDWARD DODD, A.M., *Instructor in English*
SAMUEL MAYER DODEK, A.M., M.D., *Clinical Professor of Obstetrics and Gynecology*
CHARLOTTE PATRICIA DONLAN, A.B., M.D., *Assistant Clinical Professor of Radiology*
ORVILLE WRIGHT DONNELLY, M.S., M.D., *Associate in Medicine*
WILLIAM DORFMAN, Ph.D., *Professorial Lecturer in Applied Science*
HAMILTON PEACOCK DORMAN, B.S., M.D., *Clinical Instructor in Urology*
JESSE FRANK DOUBLEDAY, A.M., *Associate Professorial Lecturer in Business Administration*
ROBERT LEROY DOW, A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
STEPHEN EVANS DOWNING, B.S., M.D., *Associate in Physiology*
DANIEL MACCABAEUS DRIBIN, Ph.D., *Professorial Lecturer in Mathematics*
ALAN MCCULLOCH DRUMMOND, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
JOHN WILLIAM DUCHEZ, M.D., *Assistant Clinical Professor of Medicine*
GYORGY DUDAS-GYORKI, M.D., *Clinical Instructor in Urology*
VIRGINIA DUGGINS, A.M., M.D., *Clinical Instructor in Neurology*
LEONARD J DUHL, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
ROBERT EDWARD DUPREY, B.S., M.D., *Assistant Clinical Professor of Ophthalmology*
WILLIAM RANKIN DURYEE, Ph.D., *Research Professor of Experimental Pathology*
JAMES ALBERT DUSHABEK, M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
ROBERT FRANCIS DYER, A.B., M.D., *Associate in Medicine; Associate University Physician*
DOLAN EAGLE, JR., Ph.D., *Assistant Professor of Chemistry*

* On sabbatical leave spring semester 1963–64.

ROY BRANDON EASTIN, Ph.D., *Professor of Business Administration*
HENRY DUNLOP ECKER, B.S., M.D., *Assistant Clinical Professor of Medicine*
GEORGE THEMISTOCLES ECONOMOS, B.S., M.D., *Clinical Instructor in Medicine*
ARLYN MINER EDELMAN, A.B., A.M. in T., *Instructor in English Composition*
DAVID EDEN, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
JUSTIN LINCOLN EIGERTON, A.B., LL.B., *Professorial Lecturer in Law*
DANIEL JAMES EDWARDS, Ph.D., *Associate Professorial Lecturer in Economics*
JOHN EFTIS, M.S. in C.E., *Assistant Professor of Applied Science*
WILFRED RUSSELL EHRMANTRAUT, B.S., M.D., *Associate in Medicine*
CHURCHILL EISENHART, Ph.D., *Adjunct Professor of Applied Science*
HOWARD EISNER, M.S., *Lecturer in Engineering*
JOEL ELKES, M.B., Ch.B., M.D., *Clinical Professor of Psychiatry*
ROBERT WHITTINGTON ELLER, B.S., A.M. in Ed., *Assistant Professor of Education; Assistant Dean of the College of General Studies*
WILLIAM JOHN ELSEN, A.M., *Associate Professorial Lecturer in Speech*
GLORIA DONNA ENG, M.D., *Clinical Instructor in Pediatrics*
ROBERT ENGLER, B.S., M.D., *Clinical Instructor in Orthopedic Surgery*
WILLIAM FRANCIS ENOS, A.B., M.D., *Assistant Clinical Professor of Pathology*
JEROME HAROLD EPSTEIN, A.M., M.D., *Associate in Medicine*
JULIUS ROBERT EPSTEIN, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
RICHARD FERDINAND ERICSON, M.B.A., Ph.D., *Professor of Business Administration*
ZEKI ERIM, A.B., M.D., *Clinical Instructor in Radiology*
MARGARET CLARA ETHIER, M.S., *Assistant Professor of Chemistry*
CLAYTON BERNARD ETHRIDGE, M.D., *Professor of Medicine; Director of Postgraduate Medical Education*
GRACE ELIZABETH ORVIS EVANS, A.M., *Professorial Lecturer in Art*
HOWARD TASKER EVANS, JR., Ph.D., *Professorial Lecturer in Geology*
JOHN MCCALLUM EVANS, A.B., M.D., *Professor of Medicine*
THEODORE MYLES FARBER, Ph.D., *Assistant Professor of Pharmacology*
MARION DEES MILLER FARIS, A.B., M.D., *Associate in Radiology*
ROBERT FARIS, B.S., *Director of Men's Athletics*
OTIS RHANOR FARLEY, A.B., M.D., *Associate Clinical Professor of Medicine*
JOHN ANTHONY FARRELL, M.D., *Assistant Clinical Professor of Psychiatry*
CLAUD MAX FARRINGTON, A.M., *Assistant to the President, for Special Projects*
DAVID MACKENZIE FAULKNER, M.B.A., *Assistant Professor of Business Administration*
JOSEPH FRANCIS FAZEKAS, M.D., *Associate Clinical Professor of Neurology*
HENRY LEON FEFFER, A.B., M.D., *Associate Clinical Professor of Orthopedic Surgery*
JAMES JOSEPH FEFFER, A.B., M.D., *Associate Clinical Professor of Medicine*
ERIC FEIGL, B.S., M.D., *Associate in Physiology*
RONALD FEIT, B.S. in M.E., *Instructor in Engineering*
MORRIS FEITEL, M.D., *Clinical Instructor in Pediatrics*
WILLIAM ROBERT FELTS, JR., B.S., M.D., *Associate Professor of Medicine*
LEON FERBER, A.B., M.D., *Associate Clinical Professor of Psychiatry*
EDWARD EGNER FERGUSON, M.D., *Clinical Professor of Urology*
WILLIAM FERGUSON, B.S., M.D., *Assistant Clinical Professor of Surgery*
CLIFFORD DURAS FERRIS, D.Sc., *Associate Professor of Applied Science*
ZELDA FICHANDLER, *Professorial Lecturer in Dramatic Art*
MICHAEL FIELD, A.B., M.D., *Associate in Physiology*
MILENKO FILIPOVITCH-NIKATCH, M.S., *Lecturer in Russian*

John Lincoln Finan, Ph.D., *Professor of Psychology*
Daniel Finucane, B.S., M.D., *Professorial Lecturer in Preventive Medicine and Community Health*
DeWitt Fisher, M.E., A.M., *Lecturer in Physics*
Gerald John Fisher, A.B., M.D., *Associate in Medicine*
Lester Walter Fix, M.D., *Assistant Clinical Professor of Pathology*
Michael Fleischer, Ph.D., *Professorial Lecturer in Geology*
Marvin Peace Footer, A.B., M.D., *Associate in Obstetrics and Gynecology*
Charles William Foulke, A.B., M.D., *Associate in Medicine*
Richard Crosman Fowler, B.S., M.D., *Assistant Professor of Medicine*
James Harold Fox, A.M., Ed.D., *Professor of Education*
Mary Alice Vann Fox, A.B., M.D., *Clinical Instructor in Pediatrics*
Raymond Richard Fox, M.S. in C.E., *Associate Professor of Engineering and Applied Science*
Randolph Adams Frank, A.B., M.D., *Associate in Psychiatry*
Clarence Kendall Fraser, Ph.B., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
Monroe Henry Freedman, A.B., LL.B., LL.M., *Associate Professor of Law*
John Andrew Frey, Ph.D., *Associate Professor of Romance Languages*
Fritz Adolph Freyhan, M.D., *Clinical Professor of Psychiatry*
Adolph Friedman, A.B., M.D., *Assistant Clinical Professor of Medicine*
Irving Friedman, Ph.D., *Lecturer in Geology*
Joseph Marshall Friedman, A.B., M.D., *Associate in Obstetrics and Gynecology*
David Frost, B.S., M.D., M.P.H., *Associate Clinical Professor of Preventive Medicine and Community Health*
William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
Marvin Fuchs, B.S., M.D., *Assistant Clinical Professor of Medicine*
James Leo Gagnier, A.B., LL.M., Major, United States Air Force, *Assistant Professor of Air Science*
*Robert Elemer Gajdusek, A.M., *Associate Professor of English*
Charles Edward Galbreath, Ph.D., *Professor of International Affairs; Coordinator, Army War College Center, Carlisle Barracks, Pennsylvania*
Michael Graham Gallagher, A.B., *Assistant Professor of Accounting*
Patrick Francis Gallagher, A.B., *Assistant Professor of Sociology and Anthropology*
Wilfred Ernest Gallinek, A.B., M.D., *Clinical Instructor in Medicine*
Robert William Gans, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
James Quincy Gant, Jr., M.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*
Leroy Maxwell Garrell, B.S., Captain, United States Air Force, *Assistant Professor of Air Science*
Raymond Leonard Garthoff, Ph.D., *Professorial Lecturer in International Affairs*
Saul Gass, A.M., *Professorial Lecturer in Applied Science*
Alexander Ramsey Gassaway, A.M., *Assistant Professor of Geography*
Michael Gassner, Ph.D., *Assistant Professor of History*
Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
Harold Loran Geisert, Ph.D., *Professor of Sociology and Anthropology*
Seymour Geisser, Ph.D., *Professorial Lecturer in Statistics*

* On leave of absence fall semester 1963–64.

PAUL GEKKER, A.M., *Lecturer in Economics*
LYNDALE HARINSTER GEORGE, B.S. in P.E., A.M. in Ed., A.P.C., *Associate Professor of Physical Education for Women*
LEON GERBER, M.D., *Clinical Instructor in Surgery*
LILA GHENT, Ph.D., *Assistant Research Professor of Psychology*
JOHN GIANCASPRO, A.M. in Ed., *Associate Professorial Lecturer in Education*
FREDERICK HARRELL GIBBS, M.H.A., *Professor of Hospital Administration; Coordinator, Programs in Health Care Administration*
SAM THOMPSON GIBSON, B.S., M.D., *Assistant Clinical Professor of Medicine*
JOSEPH GILMORE, Ph.D., *Associate in Physiology*
LEON GINTZIG, Ph.D., *Associate Professor of Hospital Administration; Assistant Coordinator, Programs in Health Care Administration*
EUGENE SOLOMON GLADSDEN, B.S., M.D., *Assistant Clinical Professor of Medicine*
EZRA GLASER, A.M., *Professorial Lecturer in Applied Science*
WILLIAM BAINBRIDGE GLEW, M.D., M.S., *Associate in Ophthalmology*
MORTON GLUCK, A.B., M.D., *Clinical Instructor in Medicine*
IRA DAVID GODWIN, B.S., M.D., *Clinical Instructor in Pathology*
HAROLD GOLD, LL.B., *Professorial Lecturer in Engineering*
HERBERT ABRAHAM GOLDBERG, M.B., Ch.B., *Associate in Urology*
SEYMOUR ZONALD GOLDBLATT, B.S., M.D., *Clinical Instructor in Pediatrics*
GEORGE JOSEPH GOLDSBOROUGH, B.S., J.D., *Professorial Lecturer in Law*
ERVIN GOMBOS, A.B., M.D., *Associate Clinical Professor of Medicine*
THOMAS ALPHONSE GONDER, B.S., M.D., *Assistant Clinical Professor of Medicine*
DEAN KEMPLE GOOD, A.B., M.B.A., *Lecturer in Business Administration*
REUBEN GOODMAN, M.D., *Associate in Dermatology and Syphilology*
JACQUELINE JARRETT GOODNOW, Ph.D., *Assistant Research Professor of Psychology*
WILLIAM WOOLCOTT GOODRICH, LL.B., *Lecturer in Law*
ROBERT SIRKOSKY GORDON, JR., A.B., M.D., *Clinical Instructor in Medicine*
SAMUEL CHRABOLOWSKI GORDON, M.D., *Assistant Clinical Professor of Psychiatry*
CONRAD GOSSELS, M.D., *Associate in Medicine*
DANIEL GOTTLIEB, A.M., *Lecturer in Journalism*
RAYMOND GEORGES GOTTSCHALK, B.S., M.D., *Associate Clinical Professor of Pathology*
ERNEST ALVA GOULD, B.S., M.D., *Assistant Clinical Professor of Surgery*
MURRAY GRANT, M.D., D.P.H., *Clinical Professor of Community Health*
IRVING GRAY, Ph.D., *Professorial Lecturer on Isotopes*
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Rashid Massumi, M.D., *Assistant Clinical Professor of Medicine*
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* On sabbatical leave spring semester 1963-64.

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*LEROY SORENSON MERRIFIELD, A.B., LL.B., M.P.A., S.J.D., *Professor of Law*
HOWARD MAXWELL MERRIMAN, Ph.D., *Professor of American Diplomatic History*
JOSEPH LOUIS METIVIER, JR., A.M., *Assistant Professor of Romance Languages*
JOSEPH METZGER, M.D., *Assistant Clinical Professor of Pathology*
LOTHAR METZL, LL.D., *Professorial Lecturer in International Affairs*
HERMAN ARNOLD MEYERSBURG, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
FRANZ MICHAEL, Dr. Jur., *Visiting Professor of International Affairs*
JAMES VINSON MILANO, B.S., M.B.A., *Associate Professorial Lecturer in Business Administration*
HILARY ETHEL CLARA MILLAR, L.R.C.P., S.E., M.P.H., *Clinical Instructor in Pediatric Psychiatry*
ARTHUR SELWYN MILLER, A.B., LL.B., J.S.D., *Professor of Law*
FRANK NELSON MILLER, JR., B.S., M.D., *Professor of Pathology*
RALPH BRETNEY MILLER, A.B., M.D., *Associate in Medicine*
LAWRENCE FRANK MISANIK, M.D., *Assistant Clinical Professor of Pathology*
HELEN LUCILLE MITCHELL, A.M., *Associate Professorial Lecturer in Education*
JERE HOLLOWAY MITCHELL, B.S., M.D., *Associate in Physiology*
REGINALD HENRY MITCHELL, M.D., *Clinical Instructor in Pediatrics*
ALBERT JAY MODLIN, M.S., M.D., *Clinical Instructor in Pediatrics*
GEORGE EDWARD MONK, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
JOHN JUDSON MONROE, A.M., *Lecturer in English*
ROBERT RICE MONTGOMERY, A.B., M.D., *Assistant Clinical Professor of Medicine*
MARGARET WHEELER MONTZKA, A.M., *Assistant Professor of Physics*
ROY EDWARD MOOR, Ph.D., *Professorial Lecturer in Economics*
ROBERT HAMILTON MOORE, Ph.D., *Professor of English Composition*
ROBERT MILTON MOORE, M.S. in Eng., *Assistant Professor of Engineering and Applied Science*
MABEL ELIZABETH MORRIS, A.M., *Lecturer in Mathematics*
WILLIAM FITZGERALD MORRISSEY, A.B., M.D., *Clinical Instructor in Medicine*
JOHN ANTHONY MORROW, A.M., *Associate Professorial Lecturer in Business Administration*
EDITH ELIZABETH MORTENSEN, Ph.D., *Professor of Zoology*
JAMES NORMAN MOSÉL, A.M., *Professor of Psychology*
HERBERT ALAN MOSKOVITZ, B.S., M.D., *Clinical Instructor in Medicine*
HOWARD OTIS MOTT, A.B., M.D., *Associate in Medicine*
STEPHEN MOURAT, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
GEORGE HAMILTON MOWBRAY, Ph.D., *Professorial Lecturer in Psychology*
MAURICE ALBERT MUFSON, A.B., M.D., *Clinical Instructor in Medicine*
ROBERT PHILLIP MULTHAUF, Ph.D., *Professorial Lecturer in History*
SAM CLARK MUNSON, Ph.D., *Professor of Biology*
ALBERT CHRISTIAN MURDAUGH, M.S. in Met.E., *Associate Professor of Engineering*
BERNARD WILLIAM MURPHY, M.B., Ch.B., *Associate in Psychiatry*
CORNELIUS FRANCIS MURPHY, B.S., M.D., *Assistant Professor of Radiology*
JAMES PETER MURPHY, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery*
JOSEPH PATRICK MURPHY, A.B., LL.B., LL.M., *Professorial Lecturer in Business Administration*
FRANCIS JAMES MURRAY, B.S., M.D., *Assistant Clinical Professor of Medicine*

* On leave of absence 1963–64.

William Henry Myers, A.M., *Professor of Physical Education for Men*
Nikos Mytilanthopoulos, Ph.D., *Associate in Neurology*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Ralph Clarke Nash, Jr., A.B., J.D., *Associate Professor of Law; Director of the Government Contracts Programs*
John Peter Nasou, A.B., M.D., *Assistant Clinical Professor of Medicine*
Anthony Nassner, Technical Sergeant, United States Air Force, *Instructor in Air Science*
Cynthia Rice Nathan, A.M., *Lecturer in Sociology*
Bertle Nelson, A.B., M.D., *Assistant Clinical Professor of Medicine*
Margaret Nelson, A.M., *Lecturer in Sociology*
*Nels David Nelson, Ph.D., *Professor of Mathematics*
Phillip Gillard Nelson, M.D., Ph.D., *Associate in Physiology*
Warren James Nelson, B.S., M.D., *Assistant Professor of Radiology*
Julius Salem Neviaser, A.B., M.D., *Associate Clinical Professor of Orthopedic Surgery*
William Newman, A.B., M.D., *Associate Professor of Pathology*
Joseph Ney, B.S., M.D., *Associate Clinical Professor of Medicine*
Elizabeth Sutherland Neyman, A.M., *Instructor in Spanish*
Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*
Andrew Anthony Nilles, A.B., LL.B., *Lecturer in Speech*
Benjamin Nimer, Ph.D., *Associate Professor of Political Science*
Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
Douglas Noble, A.B., M.D., *Clinical Professor of Psychiatry*
Richard Edward Nolan, Ph.D., *Assistant Professor of Psychology*
Eugenia Campbell Nowlin, A.M., *Associate Professorial Lecturer in Education*
Lester Nurick, B.S.S., LL.B., *Professorial Lecturer in Law*
Charles Bernard Nutting, A.B., J.D., LL.M., S.J.D., LL.D., Litt.D., L.H.D., *Professor of Law; Dean of the National Law Center*
Karl Ferdinand Oerlein, Ph.D., *Lecturer in Physics*
Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*
Elizabeth O'Hern, Ph.D., *Assistant Professor of Microbiology*
Morris Solomon Ojalvo, Ph.D., *Professor of Engineering and Applied Science*
William David Oldham, B.S., M.D., *Clinical Instructor in Urology*
George Andrew Olkhovsky, A.M., *Assistant Professor of Russian*
Bennett Olshaker, A.B., M.D., *Associate in Pediatric Psychiatry*
Ray Andrew Olsson, M.D., *Clinical Instructor in Medicine*
Wolfgang Walter Oppelt, B.S., M.D., *Associate in Physiology*
Jack Orloff, M.D., *Associate in Medicine*
Harold Heacock Orvis, B.S., M.D., *Assistant Professor of Medicine*
Heinz Dieter Osterle, Studienreferendar, *Assistant Professor of German*
Mary Osterndorf, M.S., *Associate Professorial Lecturer in Home Economics*
Bernard Howard Ostrow, A.B., M.D., *Associate in Medicine*
Joseph Henry Francis Ott, A.B., *Studio Lecturer in Applied Music (Piano)*
Gilbert Ottenberg, A.M., M.D., *Assistant Clinical Professor of Urology*
Harry Robert Page, M.B.A., *Assistant Professor of Business Administration; Acting Coordinator, Programs in Public Administration*
Russel Smith Page, Jr., A.B., M.D., *Assistant Clinical Professor of Otolaryngology; Medical Consultant to the Speech Clinic*

*On sabbatical leave spring semester 1963–64

Richmond Shepard Paine, A.B., M.D., *Professor of Pediatric Neurology*
Helen Pallister, Ph.D., *Assistant Professor of Psychiatry (Psychology)*
Richard Emery Palmer, A.B., M.D., *Assistant Clinical Professor of Pathology*
Edwin Pearson Parker III, B.S., M.D., *Assistant Clinical Professor of Medicine*
Joanne Bouthillet Parker, A.B., A.M. in Ed., *Lecturer in Education*
Kittie Fenley Parker, Ph.D., *Associate Professorial Lecturer on Plant Taxonomy*
Dee Rich Parkinson, M.D., *Clinical Instructor in Pathology*
John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology; Dean of the School of Medicine; Medical Director, University Hospital*
Robert Carleton Parlett, M.D., Ph.D., *Professor of Microbiology*
Alvin Edward Parrish, M.D., *Associate Professor of Medicine; Associate Dean of the School of Medicine*
Robert Harold Parrott, M.D., *Clinical Professor of Pediatrics*
Sam Chapman Pascoe, A.B., M.D., *Associate in Medicine*
Harold Irwin Passes, Med.B., B.Surg., *Associate in Medicine*
John Howell Peacock, Jr., B.S., M.D., *Associate in Pediatrics*
Helen Glick Pearcy, A.B., M.S.W., *Assistant Professor of Psychiatry (Social Work)*
Jed Williams Pearson, Jr., A.B., M.D., *Associate in Obstetrics and Gynecology*
Frederick Allen Peck, B.S., M.D., *Clinical Instructor in Medicine*
William Jackson Peeples, B.S., M.D., M.P.H., *Professorial Lecturer in Hospital Administration*
Thomas Martin Peery, A.B., M.D., *Professor of Pathology*
George Bernard Pelleu, Jr., M.S., *Associate in Microbiology*
Carl Lewis Perian, A.M., *Professorial Lecturer in Sociology*
Jack Perlmutter, *Studio Lecturer in Art (Print Making)*
Louis Robert Perna, A.B., M.D., *Clinical Instructor in Surgery*
Theodore Peter Perros, Ph.D., *Professor of Chemistry*
James Hutcheon Pert, A.B., M.D., *Assistant Clinical Professor of Medicine*
Robert Petersen, Ph.D., *Assistant Research Professor of Psychology*
Chester Peterson, B.S., *Associate Professorial Lecturer in Engineering*
John Emerick Peterson, A.B., M.D., *Clinical Instructor in Surgery*
Leonard Theodore Peterson, B.S., M.D., *Associate Clinical Professor of Orthopedic Surgery*
Calvin Weir Pettit, Ph.D., *Professor of Speech; Director of Speech Clinic*
Carl Herman Pfuntner, A.M., *Associate Professorial Lecturer in Philosophy*
Ewing Lakin Phillips, Ph.D., *Professor of Psychology; Director of the Testing and Counseling Center*
Jerome Percival Pickard, Ph.D., *Associate Professorial Lecturer in Geography*
Howard Clemeth Pierpont, A.B., M.D., *Associate Professor of Surgery*
Lois Irene Platt, A.B., M.D., *Assistant Professor of Pathology (Cytology)*
Harold Plotsky, Ph.B., B.S., M.D., *Clinical Instructor in Pediatric Psychiatry*
Richard James Podolsky, Ph.D., *Lecturer in Physiology*
George Nicholas Polis, B.S., M.D., *Clinical Instructor in Medicine*
Ross Pollock, A.M., *Associate Professorial Lecturer in Public Administration*
Robert Smallwood Poole, A.B., M.D., *Associate in Medicine*
Nadine Popluiko, Ph.D., *Assistant Professor of Russian*
Virginia Pillow Porter, A.B., M.D., *Instructor in Anesthesiology*
Edward Andrew Potts, A.B., LL.B., *Associate Professor of Law; Assistant Dean for Development in the National Law Center*
Daniel Prager, A.M., M.D., *Associate in Psychiatry*

Andrew Gabriel Prandoni, B.S., M.D., *Associate Clinical Professor of Medicine*
Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*
Douglas Boyd Price, M.D., *Associate in Psychiatry*
Nizel Jack Price, B.S., M.D., *Associate in Obstetrics and Gynecology*
Leon Denton Prockop, A.B., M.D., *Associate in Physiology*
Maurice Protas, A.B., M.D., *Associate in Medicine*
John Provan, M.S., *Associate Professorial Lecturer in Business and Public Administration*
Herbert Lamont Pugh, B.S., M.D., *University Physician*
José Rafael Puig, M.D., *Assistant Clinical Professor of Pediatrics*
Lawrence Elias Putnam, A.B., M.D., *Assistant Clinical Professor of Medicine*
Lawrence Pyle, Jr., M.D., *Assistant Clinical Professor of Preventive Medicine and Community Health*
Herbert Rabin, Ph.D., *Associate Professorial Lecturer in Physics*
Lawrence Rabinowitz, Ph.D., *Associate in Physiology*
Boris Rabkin, A.B., M.D., *Associate in Medicine*
David Platt Rall, M.D., Ph.D., *Lecturer in Physiology*
Bernard Ramundo, LL.B., A.M., *Lecturer in Law; Lecturer in International Affairs*
Joseph Eugene Rankin, B.S., M.D., *Associate Professor of Psychiatry*
Martha Norman Rashid, Ph.D., *Associate Professor of Education*
Catherine Ray, A.B., M.D., *Clinical Instructor in Medicine*
Edward Luke Rea, A.B., M.D., *Associate in Medicine*
Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*
John Palmer Reesing, Jr., Ph.D., *Professor of English Literature*
Melvin Reich, Ph.D., *Assistant Research Professor of Pharmacology*
Thomas Elmer Reichelderfer, B.S., M.D., M.P.H., *Associate Clinical Professor of Pediatrics*
William Jennings Reinhart, B.B.A., *Associate in Physical Education for Men*
Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*
Peter Repetto, A.B., M.D., *Clinical Instructor in Dermatology and Syphilology*
Frederick Turner Reuter, M.D., *Associate Clinical Professor of Urology*
Richard Coleman Rhame, A.B., M.D., *Clinical Instructor in Urology*
Jack Jacob Rheingold, A.B., M.D., *Associate Clinical Professor of Medicine*
Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*
Charles Rickerich, B.S., M.D., *Clinical Instructor in Surgery*
Floyd Millard Riddick, Ph.D., *Professorial Lecturer in Political Science*
Richard Edgar Rieselbach, B.S., M.D., *Clinical Instructor in Medicine*
Robert Meldrum Riggs, A.M., *Instructor in French*
Irvin Harold Rimel, B.S., J.D., *Associate Professorial Lecturer in Law*
Norman Charles Rintz, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
Antonio Manuel Rivera, B.S., M.D., *Clinical Instructor in Pediatrics*
Hugo Victor Rizzoli, A.B., M.D., *Associate Clinical Professor of Neurological Surgery*
John Whitson Roark, B.S., M.D., *Associate in Medicine*
*James Willis Robb, Ph.D., *Associate Professor of Romance Languages*
Mary Louise Robbins, Ph.D., *Professor of Microbiology*
James Irvin Robertson, Jr., Ph.D., *Associate Professorial Lecturer in History*
Robert Hood Robertson, M.D., *Clinical Instructor in Neurology*

* On sabbatical leave spring semester 1963-64.

GEORGE NELSON ROBILLARD, B.S., LL.B., *Professorial Lecturer in Law*
LOUIS ROBINSON, A.B., *Lecturer in Journalism*
STEPHEN HOWARD ROBINSON, A.B., M.D., *Clinical Instructor in Medicine*
FLOYD STERLING ROGERS, B.S., M.D., *Associate in Obstetrics and Gynecology*
GRETCHEN LOUISA ROGERS, Ph.D., *Professor of German*
JAMES FRANKLIN ROGERS, Ph.D., *Professorial Lecturer in Education*
RICHARD ALLAN ROGERS, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
DERRILL CONWAY ROHLFS, M.S. in Eng., *Lecturer in Engineering*
AUSTIN BERTRAM ROHRBAUGH, Jr., A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
RUFUS MARTIN ROLL, A.B., M.D., *Associate in Obstetrics and Gynecology*
MONROE JAMES ROMANSKY, A.B., M.D., *Professor of Medicine*
WALTER JOSEPH ROMEJKO, B.S., M.D., *Assistant Clinical Professor of Ophthalmology*
BLAKE SMITH ROOT, A.M., Ed.D., *Professor of Education; Assistant Dean of the School of Education*
HERBERT GERALD ROSE, M.D., *Clinical Instructor in Medicine*
MORTON HAROLD ROSE, M.D., *Assistant Clinical Professor of Medicine*
PAUL ARCHIBALD ROSE, LL.B., *Professorial Lecturer in Law*
ARTHUR ROSENBAUM, B.S., M.D., *Associate Clinical Professor of Medicine*
MORRIS HIRSH ROSENBERG, A.B., M.D., *Assistant Clinical Professor of Medicine*
GRIFF TERRY ROSS, A.B., M.D., *Associate in Physiology*
LOUIS ROSS, M.D., *Assistant Clinical Professor of Medicine*
LOUIS SAMUEL ROTOLO, M.E.A., *Lecturer in Engineering*
IRWIN WINN ROVNER, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
NORMAN HARTLEY RUBENSTEIN, M.D., *Associate in Medicine*
JESSE GALLANT RUBIN, B.S., M.D., *Assistant Professor of Psychiatry*
JOHN RUDDLEY, A.M., *Studio Lecturer in Art (Design)*
MARSHALL DEGRAFFENRIED RUFFIN, B.S., M.D., *Associate Clinical Professor of Psychiatry*
PATRICIA HOLLY RUSSELL, M.D., *Assistant Professor of Anesthesiology*
ALEXANDER RUSSO, B.S.A., *Studio Lecturer in Art (Drawing and Painting)*
JOSEPH YOUNG RUTH, A.B., *Director of Admissions*
ROBERT CLINTON RUTLEDGE, A.M., *Assistant Professor of English*
THOMAS SAATY, Ph.D., *Professorial Lecturer in Mathematics*
JOSEPH AZIZ SABRI, A.B., M.D., *Assistant Clinical Professor of Otolaryngology*
HAROLD CHARLES SADIN, A.B., M.D., *Associate in Medicine*
JOSEPH FRANCIS SADUSK, Jr., A.B., M.D., *Professor of Preventive Medicine and Community Health; Director of University Clinics of the University Hospital*
JOHN HARMER SAGER, A.B., M.D., *Clinical Instructor in Surgery*
WILLIAM FREDERICK SAGER, Ph.D., *Professor of Chemistry*
CAROL RUTH ST. CYR, Ph.D., *Associate Professor of Education*
ROBERT SAMMONS, A.M., M.P.A., *Associate Professorial Lecturer in Economics*
KEITH RUSSELL SANDERS, M.S., *Assistant Professor of Speech*
ZACK WITTEN SANDERS, A.B., M.D., *Clinical Instructor in Neurology*
MELVIN WESLEY SANDMEYER, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
THOMAS STONE SAPPINGTON, A.B., M.D., *Associate Clinical Professor of Medicine*
MARY KATHERINE LAURENCE SARTWELL, A.B., M.D., *Associate in Pediatrics*
CHARLES JOSEPH SAVARESE, Jr., A.B., M.D., *Clinical Instructor in Medicine*
PETER HANS SAWITZ, M.S. in E.E., *Lecturer in Engineering*

Richard Schaengold, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
Leslie Schaffer, M.B., Ch.B., *Associate in Psychiatry*
William John Schewe, A.B., M.D., *Assistant Clinical Professor of Medicine*
Lewis Aaron Schiller, LL.B., A.M., *Assistant Professor of Law*
Ross Pelton Schlabach, Jr., M.S., *Professor of Journalism*
Richard Harold Schlagel, Ph.D., *Associate Professor of Philosophy*
Lawrence Erwin Schlesinger, Ph.D., *Associate Research Professor of Psychology*
William Edward Schmidt, Ph.D., *Professor of Chemistry*
Wilson Emerson Schmidt, Ph.D., *Professor of Economics*
Carmi Schooler, Ph.D., *Lecturer in Sociology*
Cyril Augustus Schulman, B.S., M.D., *Assistant Clinical Professor of Medicine*
John Duncan Schultz, A.B., M.D., *Clinical Professor of Psychiatry*
Maxine Ann Schurter, A.B., M.D., *Assistant Clinical Professor of Surgery*
Samuel Meyer Schwartz, Ph.D., *Associate Professor of Pharmaceutical Chemistry*
Mary Hughie Scott, M.S., Ed.D., *Associate Professorial Lecturer in Education*
Norman Orville Scribner, Jr., Mus.B., *Studio Lecturer in Applied Music (Organ)*
Edward William Seaman, A.B., M.H.L., *Lecturer in Religion*
David Earl Seidelson, A.B., LL.B., *Associate Professor of Law*
Aaron Bear Seidman, A.M., Rabbi, *Lecturer in Religion; Lecturer in Classical Hebrew*
Alvin Seltzer, B.S., M.D., *Associate in Medicine*
Robert Clair Sentz, Ph.D., *Assistant Professor of Chemistry*
Felix Ira Shaffner, Ph.D., *Professorial Lecturer in Business Administration*
David James Sharpe, A.B., LL.B., *Associate Professor of Law*
George Sharpz, A.B., M.D., *Clinical Instructor in Medicine*
Samuel Hazen Shea, A.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*
George Walter Shelhorse, LL.B., *Lecturer in Law*
Ernest Sewall Shepard, A.M., *Professor of English Literature*
Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*
Max Gimble Sherer, M.S., M.D., *Clinical Instructor in Medicine*
Joseph Lee Sheridan, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
Raymond Michael Shirven, B.S., *Instructor in Physics*
Lewis Shollenberger, A.B., *Lecturer in Speech*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Walter Allen Shropshire, Jr., Ph.D., *Lecturer in Botany*
Edwin Shutts, Ph.D., *Associate Professorial Lecturer in Speech*
Lassalle Sickman, A.B., *Studio Lecturer in Art (Drawing and Painting)*
Robert Sumner Sicafoos, Ph.D., *Associate Professorial Lecturer on Plant Ecology*
Harold Martin Silver, A.B., M.D., *Assistant Clinical Professor of Medicine*
Kenneth Thomas Simendinger, M.S., *Associate in English*
Artemis Pinkerson Simopoulos, M.D., *Assistant Professor of Pediatrics*
Clark Simpson, M.C.S., *Professorial Lecturer in Accounting*
Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
James Glover Sites, M.D., *Associate Professor of Obstetrics and Gynecology*
Irene I-Lien Hsu Siu, B.S., M.D., *Assistant Professor of Medicine*
Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D., *Milbank Professor of Religion; Director of University Chapel*
Martin Oliver Skelton, M.B., Ch.B., *Visiting Associate Professor of Pathology*
Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

JOHN WILLIAM SKINNER, Ph.D., *Professor of Economics*
CHARLES HENRY SLAYMAN, JR., LL.B., *Lecturer in Political Science*
CLARENCE CLELL SMARR, Staff Sergeant, United States Air Force, *Instructor in Air Science*
BENJAMIN WILLIAMS SMITH, Ph.D., *Associate Professor of Biochemistry*
EDWARD BYRON SMITH, B.S., M.D., *Clinical Professor of Pathology*
HERBERT ERNEST SMITH, Ph.D., *Professor of Engineering and Applied Science; Assistant Dean (Academic) of the School of Engineering and Applied Science*
LOWELL CYRUS SMITH, M.B.A., *Assistant Professor of Business and Public Administration*
LYMAN BRADFORD SMITH, Ph.D., *Professorial Lecturer on Plant Taxonomy*
RALPH GRAFTON SMITH, M.D., Ph.D., *Clinical Professor of Pharmacology*
SCOTT WINFIELD SMITH, Ph.D., *Associate in Radiology*
THOMAS RUSSELL SMITH, B.J., *Lecturer in Journalism*
WILLIAM ARTHUR SMITH, A.M., *Associate Professor of Mathematics*
NICHOLAS PATRICK DILLON SMYTH, M.S., M.B., Ch.B., *Assistant Professor of Surgery*
JEANNE ELLEN SNODGRASS, A.B., M.S. in P.E., *Assistant Professor of Physical Education for Women*
LUTHER HENRY SNYDER, A.B., M.D., *Associate in Medicine*
ISRAEL GREGORY SOHN, A.M. *Professorial Lecturer on Paleontology*
HENRY SOLOMON, Ph.D., *Associate Research Professor of Economics*
WALDO SOMMERS, Ph.D., *Professor of Public Administration; Coordinator, Air Force Advanced Management Program*
EDMUND HIRUM SONNENBLICK, A.B., M.D., *Associate in Physiology*
GUNTHER SORGER, Dr. Ing., *Adjunct Professor of Engineering*
EMILIO VICENTO SOTO, B.S., M.D., M.Med.Sc., *Assistant Professor of Pediatrics*
PETER SOYSTER, M.D., *Associate in Obstetrics and Gynecology*
GEORGE WARREN SPREHN, M.D., *Assistant Clinical Professor of Psychiatry*
*LORETTA MAY STALLINGS, A.M., *Associate Professor of Physical Education for Women; Director of Women's Athletics*
GEORGE STAMBUK, Ph.D., *Associate Professor of International Affairs*
WILLIAM WOODROW STANBRO, M.D., *Professor of Radiology*
WILLIAM STARK, A.B., M.D., *Assistant Clinical Professor of Pediatric Psychiatry*
IRA ERNEST STEELE, A.M., *Professorial Lecturer in Accounting*
GEORGE STEINER, B.S., Mus.M., *Assistant Professor of Music; Director of Orchestra*
ROBERT STEINMULLER, M.D., *Clinical Instructor in Medicine*
RICHARD WALTON STEPHENS, Ph.D., *Professor of Sociology and Anthropology; Assistant Dean of Columbian College of Arts and Sciences*
EDWIN LOCKWOOD STEVENS, A.M., *Professor of Speech*
HAROLD STEVENS, Ph.D., M.D., *Professor of Neurology*
RUSSELL BRADFORD STEVENS, Ph.D., *Professor of Botany*
CHARLES TODD STEWART, JR., Ph.D., *Research Professor of Economics*
ROBERT STEWART, Ph.D., *Associate Professorial Lecturer in Botany*
THOMAS DALE STEWART, A.B., M.D., *Professorial Lecturer in Anatomy*
CHARLES FREDERICK STIEGLER, A.B., M.D., *Associate in Pediatrics*
MYER HAROLD STOLAR, B.S., M.D., *Assistant Clinical Professor of Medicine*
THOMAS ARCHIE STONE, B.D., Ph.D., *Professorial Lecturer in Religion*
WILLIAM LEETE STONE, A.B., M.D., *Associate in Medicine*

* On sabbatical leave 1963-64.

Joseph Novak Stonesifer, A.M., *Professorial Lecturer in Business Administration*
Hiram Miller Stout, Ph.D., *Professor of International Affairs; Coordinator of Programs, Naval War College, Newport, Rhode Island*
Belinda Crompton Straight, M.D., *Clinical Instructor in Pediatric Psychiatry*
Francis Cowles Strickland, A.M., *Associate Professorial Lecturer in Speech*
Karl Ernest Stromsem, Ph.D., *Professorial Lecturer in Public Administration*
Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*
Samuel Jacob Nathan Sugar, Phar.G., M.D., *Assistant Clinical Professor of Medicine*
John Paul Sullivan, Ph.B., LL.B., *Associate Professor of Law*
Donald Fredrick Summers, B.S., M.D., *Clinical Instructor in Medicine*
David Chen-Hwa Sun, M.D., Sc.D., *Associate Clinical Professor of Medicine*
Rafael Supervía, Doctor en derechio, *Professor of Spanish*
Edith Shore Surrey, A.M., *Lecturer in Speech*
Walter Sterling Surrey, B.S., LL.B., *Professorial Lecturer in Law*
Garrett Michael Swain, M.D., *Assistant Clinical Professor of Neurological Surgery*
Leon Swell, Ph.D., *Professorial Lecturer on Lipids*
Stanley Jerome Talpers, A.B., M.D., *Associate in Medicine*
Irene Gorski Tamagna, M.D., *Associate Clinical Professor of Medicine*
Joseph Taney, *Studio Lecturer in Art (Commercial Art)*
Nelson Monroe Tart, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
Norman Taub, B.S., M.D., *Associate Clinical Professor of Psychiatry*
William Lonsdale Tayler, Ph.D., *Professor of International Affairs*
George Taylor, A.M., D.Litt., *Visiting Professor of International Affairs*
Robert George Taylor, M.D., *Associate in Medicine*
Geza Teleki, Ph.D., *Professor of Geology*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Douglas Harold Teller, A.B., M.F.A., *Assistant Professor of Art*
Sarah Shtoffer Tenenblatt, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
John Newell Tevis, A.M., *Lecturer in Physics*
James Richard Thistlethwaite, B.S., M.D., *Associate Clinical Professor of Surgery*
Klaus Thoenelt, Ph.D., *Assistant Professor of German*
Lawrence Jay Thomas, B.S., M.D., *Assistant Clinical Professor of Medicine*
Raymond Edward Thomas, A.M., *Assistant Professor of Statistics*
Charles Waters Thompson, M.D., *Assistant Clinical Professor of Medicine*
Ronald Bettes Thompson, Ph.D., *Professor of European History*
William Dove Thompson, A.M., Ed.D., *Associate Professorial Lecturer in Physical Education*
Howard Erwin Ticktin, A.B., M.D., *Assistant Clinical Professor of Medicine*
Charles Stanley Tidball, Ph.D., M.D., *Assistant Research Professor of Physiology*
Elizabeth Tidball, Ph.D., *Assistant Research Professor of Pharmacology*
George Tievsky, B.S., M.D., *Clinical Instructor in Radiology*
Anna Coyne Todd, A.B., M.D., *Associate Clinical Professor of Psychiatry*
Margaret Cooper Tolson, Mus.M., *Studio Lecturer in Applied Music (Piano)*
John Ettinger Tompkins, A.M., *Lecturer in Physics*
David Michael Tormey, B.S., M.D., *Associate in Medicine*
William George Torpey, Ph.D., *Professorial Lecturer in Public Administration*
Kathryn Mildred Towne, A.M., *Professor of Home Economics*
Janet Travell, A.B., M.D., *Associate Clinical Professor of Medicine*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Howard Pettit Treichler, M.D., *Associate in Obstetrics and Gynecology*

JOHN WATKINS TRENIS, A.B., M.D., *Associate Clinical Professor of Medicine*
WILLIAM MACLOHON TRIBLE, A.B., M.D., M.Med.Sc., *Assistant Clinical Professor of Otolaryngology*
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DON TURANO, *Studio Lecturer in Art (Sculpture)*
WILLIAM LEWIS TURNER, Ph.D., *Associate Professor of English; Assistant Dean in Columbian College of Arts and Sciences*
CURTIS EDWARD TUTHILL, Ph.D., *Associate Professor of Psychology*
SIDNEY UDENFRIEND, Ph.D., *Professorial Lecturer on Intermediary Metabolism*
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GEORGE VARTKES VAHOUNY, Ph.D., *Associate Professor of Biochemistry*
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LUVERNE CRABTREE WALKER, A.M., *Associate Professorial Lecturer in Education*
ROBERT HARRIS WALKER, JR., Ph.D., *Professor of American Civilization*
EDWARD MARTIN WALL, A.B., LL.B., Lieutenant Colonel, United States Air Force, *Professor of Air Science; Director of Air Science*
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JOHN WALSH, B.S., M.D., *Associate in Medicine*
JOHN PATRICK WALSH, M.S., Ed.D., *Professorial Lecturer in Education*
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* On sabbatical leave spring semester 1963–64.

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WILLIAM WEISS, M.D., *Assistant Research Professor of Pharmacology*
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FRANCIS LIELL WENGER, M.D., *Associate in Physical Medicine and Rehabilitation*
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ROBERT CHARLES WOOD, Ph.D., *Assistant Professor of Microbiology*
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ELIZABETH TRUMAN WRIGHT, A.M., *Associate Professor of English Composition; Assistant Dean of the Division of University Students*

* On leave of absence 1963–64.

THOMAS MAHLON WRIGHT, A.B., M.D., *Clinical Instructor in Surgery*
ALVIN CHARLES WYMAN, A.B., M.D., *Assistant Clinical Professor of Radiology*
JEAN YACOUBIAN, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
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HAROLD TAYLOR YATES, M.D., *Clinical Instructor in Pediatrics*
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HARVEY ELWOOD YEIDE, JR., A.B., B.D., *Assistant Professor of Religion*
LEON YOCHELSON, A.B., M.D., *Professor of Psychiatry*
SAMUEL YOCHELSON, Ph.D., M.D., *Research Professor of Psychiatry*
CHARLES RICHARD YOUNG, Technical Sergeant, United States Air Force, *Instructor in Air Science*
RALPH AUBREY YOUNG, M.B.A., Ph.D., *Professorial Lecturer in Economics*
THEODORE YOUNG, B.S., *Adjunct Professor of Engineering*
WILLIAM HURLBURT YOUNG, JR., B.S., M.D., *Associate in Psychiatry*
JULE ZABAWA, Mus.B., A.B., *Studio Lecturer in Applied Music (Voice)*
ELMAR ZEITLER, Ph.D., *Assistant Clinical Professor of Pathology*
EDWARD ZIMMERMAN, B.S., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*
LORENZ EUGENE ZIMMERMAN, A.B., M.D., *Associate in Pathology*
CHARLES JAMES ZINN, A.B., LL.B., LL.M., S.J.D., *Professorial Lecturer in Law*
ARTLEY JOSEPH ZUCHELLI, Ph.D., *Associate Professor of Physics*
WILLIAM ZUKEL, B.S., M.D., D.P.H., *Associate Clinical Professor of Preventive Medicine and Community Health*

CONSULTANTS IN RESEARCH

THE GRADUATE COUNCIL

ANTONIO ALONSO, A.M., *Professor Emeritus of Spanish*; Modern Spanish Literature
ROBERT ALLEN ALTENBERN, Ph.D., *Biochemist, Medical Bacteriology Division, Fort Detrick*; Bacterial Physiology and Nutrition
JULIUS AXELROD, Ph.D., *Chief, Section on Pharmacology, Laboratory of Clinical Science, National Institute of Mental Health*; Drug Metabolism
PAUL WILLIAM BOWMAN, Ph.D., *Research Grants Coordinator, National Institute of General Medical Sciences*; Cytology
ROSCOE BRADY, JR., M.D., *Chief, Section on Lipid Chemistry, Laboratory of Neurochemistry, National Institute of Neurological Diseases and Blindness*; Complex Lipids
GEORGE MCSPADDEN BRIGGS, Ph.D., *Chief, Nutrition Unit, Laboratory of Biochemistry and Nutrition, National Institute of Arthritis and Metabolic Diseases*; Animal Nutrition
BERNARD BERYL BRODIE, Ph.D., *Chief, Laboratory of Chemical Pharmacology, National Heart Institute*; Biochemical Detoxication
ARTHUR BROWN, Ph.D., *Chief, Branch II, Virus and Rickettsia Division, Fort Detrick*; Virology
DEAN BURK, Ph.D., *Head, Cytochemistry Unit, National Cancer Institute*; Tissue Respiration in Biochemistry

* On sabbatical leave spring semester 1963–64.

JOHN JOSEPH BURNS, Ph.D., *Associate Research Director, Burroughs-Wellcome, Ltd.*; Ascorbic Acid Metabolism

WILLIAM ROBERT CARROLL, Ph.D., *Biochemist, Laboratory of Physical Biology, National Institute of Arthritis and Metabolic Diseases*; Chemistry and Metabolism of Proteins

HENRY MARCELLUS CATHEY, Ph.D., *Horticulturist, Plant Industry Station, Department of Agriculture*; Plant Physiology; Vascular Plants

CHARLES L. CHRIST, Ph.D., *Physicist, Solid State Group, Geochemistry and Petrology Branch, United States Geological Survey*; Geochemistry

JOHN FULMER CLARK, Ph.D., *Chief, Geophysics Programs, National Aeronautic Space Agency*; Atmospheric Physics

DEAN JEFFERSON CLYDE, Ph.D., *Director, Biometric Laboratory, Office for Sponsored Research, The George Washington University*; Clinical Psychology

GERHARD COLM, Dr. rer. pol., *Chief Economist, National Planning Association*; Public Finance; National Income

MARGARET GARRITSEN DE VRIES, Ph.D., *Economist*; International Finance

WILLIAM RANKIN DURYEE, Ph.D., *Research Professor of Physiology*; Cellular Physiology

FRANÇOIS NAFTALI FRENKIEL, Ph.D., *Physicist, Applied Physics Laboratory, Johns Hopkins University*; Aerodynamics

JAMES GILLETTE, Ph.D., *Head, Section on Enzyme Drug Interaction, Laboratory of Chemical Pharmacology, National Heart Institute*; Drug Metabolism

ABRAHAM GOLDIN, Ph.D., *Head, Biochemical Pharmacology Section, Laboratory of Chemical Pharmacology, National Cancer Institute*; Chemotherapy

NORWOOD BABCOCK GOVE, Ph.D., *Nuclear Data Group, National Academy of Science*; Low Energy Nuclear Physics

ROBERT LORIMER GRANT, Ph.D., *Chief, Insulin Branch, Division of Pharmacology, United States Food and Drug Administration*; Metabolic Relationships of Insulin

EDWARD HACSKAYLO, Ph.D., *Plant Physiologist, Forest Physiology Laboratory, Department of Agriculture*; (1) Mycology; (2) Plant Physiology: Microorganisms

HENRY FIELD HAVILAND, JR., Ph.D., *Senior Staff Member, Brookings Institution*; International Relations, especially American Foreign Policy

ROY HERTZ, Ph.D., M.D., *Chief, Endocrinology Branch, National Cancer Institute*; Endocrinology

ROGER HILSMAN, Ph.D., *Director, Bureau of Intelligence and Research, Department of State*; International Relations

JOSEPH HOFFMAN, Ph.D., *Head, Section on Membrane Physiology, Laboratory of Kidney and Electrolyte Metabolism, National Heart Institute*; Cellular Physiology

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LENT CLIFTON JOHNSON, M.D., *Chief, Bone and Joint Pathology, Armed Forces Institute of Pathology*; Histology

BERT NICHOLS LA DU, JR., M.D., Ph.D., *Senior Surgeon, United States Public Health Service, National Institute of Arthritis and Metabolic Diseases*; Amino Acid Metabolism

HOWARD MAER LENHOFF, Ph.D., *Acting Chief, Biochemistry Section, Armed Forces Institute of Pathology*; Protein Biosynthesis

LADISLAUS LASZLO MARTON, Ph.D., *Physicist, Atomic Physics, Electronics Division, National Bureau of Standards*; Electron Optics

MARGARET MERCER, Ph.D., *Program Director, Clinical Psychology, Behavioral Studies Branch, St. Elizabeths Hospital*; Clinical Psychology

WALTER MERTZ, M.D., *Biochemist Supervisor, Walter Reed Army Institute of Research*; Intermediary Metabolism

WINFRED OVERHOLSER, A.B., M.D., Sc.D., L.H.D., LL.D., *Professor Emeritus of Psychiatry*; Psychiatry: Problems of Treatment

KITTIE FENLEY PARKER, Ph.D., *Honorary Research Associate, Department of Botany, Smithsonian Institution*; Plant Taxonomy

JACQUES JACOBUS POLAK, Ph.D., *Director, Research Department, International Monetary Fund*; International Finance

MERLE IRVING PROTZMAN, Ph.D., *Professor Emeritus of Romance Languages*; Seventeenth Century French Literature

MARCO RABINOVITZ, Ph.D., *Research Chemist, National Cancer Institute*; Protein Metabolism

WAYNE DAVID RASMUSSEN, Ph.D., *Chief, Agricultural History Branch, Economic and Statistical Division, United States Department of Agriculture*; History of Land Legislation

JOSEPH HYRAM ROE, Ph.D., *Professor Emeritus of Biochemistry*; Carbohydrate Metabolism; Nutrition (emphasis on vitamins); Pathological Chemistry

STANLEY JAY SARNOFF, M.D., *Chief, Laboratory of Cardiovascular Physiology, National Heart Institute*; Cardiovascular Physiology

LEONARD PETER SCHULTZ, Ph.D., *Curator of Fishes, United States National Museum*; Vertebrate Zoology: Ichthyology

WALTER ALLEN SHROPSHIRE, JR., Ph.D., *Biophysicist, Division of Radiation and Organisms, Smithsonian Institution*; Photobiology

ROBERT SUMNER SIGAFOOS, Ph.D., *Botanist, United States Geological Survey*; Plant Ecology

LYMAN BRADFORD SMITH, Ph.D., *Curator, Division of Phanerogams, Department of Botany, Smithsonian Institution*; Taxonomy

DEWITT STETTEN, JR., M.D., Ph.D., *Director, Intramural Research, National Institute of Arthritis and Metabolic Diseases*; Carbohydrate Metabolism

ROBERT STEWART, Ph.D., *Horticulturist, Vegetable and Ornamentals Research Branch, Crops Research Division, Plant Industry Station, Department of Agriculture*; Cytogenetics

THOMAS DALE STEWART, A.B., M.D., *Curator, Physical Anthropology, United States National Museum*; Physical Anthropology

MICHAEL JOSEPH SURGALLA, Ph.D., *Chief, Bacteriology I Branch, Medical Bacteriology Division, Fort Detrick*; Immunology

SIDNEY UDENFRIEND, Ph.D., *Chief, Laboratory of Clinical Biochemistry, National Heart Institute*; Amino Acid Metabolism; Neurohormones

LUDWIG VON SALLMANN, M.D., *Chief, Ophthalmology Branch, National Institute of Neurological Diseases and Blindness*; Neuro-ophthalmology

FRANK MARK WEIDA, Ph.D., *Professor Emeritus of Statistics*; Theoretical Statistics: Probability and Sampling; Applied Statistics: Econometrics

EMILIO WEISS, Ph.D., *Deputy Director, Department of Microbiology, Naval Medical Research Institute, National Naval Medical Center*; Virology

WARREN REED WEST, Ph.D., *Professor Emeritus of Political Science*; United States: (1) Legislative Process; (2) Governmental Organization and Administration

GEORGE GREEN WRIGHT, Ph.D., *Chief, Immunology Branch, Fort Detrick*; Immunology

RALPH AUBREY YOUNG, Ph.D., *Director, Division of Research and Statistics, Board of Governors, Federal Reserve System;* International Finance

SPECIAL LECTURERS

MEDICINE

LOUIS SOL BARON, Ph.D., *Chief, Department of Bacterial Immunology, Division of Immunology, Walter Reed Army Institute of Research;* Microbial Genetics

ROBERT WILLIAM BERLINER, B.S., M.D., *Chief, Section on Kidney and Electrolyte Metabolism, National Heart Institute;* Renal Disease

JACK HAROLD UPTON BROWN, Ph.D., *Executive Secretary, Physiology Study Section, Division of General Medical Sciences, National Institutes of Health;* Physiology

PETER DIACOUMIS COMANDURAS, B.S., M.D., M.S. in Med., *Secretary General, Medical International Cooperation;* Gastroenterology

ERNEST COTLOVE, B.S., M.D., *Chief, Clinical Chemistry Service, Department of Clinical Pathology, National Institutes of Health;* Medicine

WILLIAM HOLMES CROSBY, A.B., M.D., *Chief of Hematology, Walter Reed Army Institute of Research;* Hematology

KENNETH MARTIN EARLE, A.B., M.D., M.Sc., *Chief, Neuropathology Branch, Armed Forces Institute of Pathology;* Neurology

ROBERT HANNA FELIX, M.D., M.P.H., *Director, National Institute of Mental Health;* Psychiatry

DONALD SHARP FREDERICKSON, B.S., M.D., *Clinical Researcher, Laboratory of Cellular Physiology and Metabolism, National Heart Institute;* Internal Medicine

JAMES LEE GODDARD, M.D., M.P.H., *Civil Air Surgeon, Federal Aviation Administration;* Aviation Medicine

FRANCIS BYRON GORDON, Ph.D., M.D., *Head, Virology Division, Naval Medical Research Institute;* Virology

ELSON BOWMAN HELWIG, B.S., M.D., *Chief, Pathology Division, Armed Forces Institute of Pathology;* Pathology

ROY HERTZ, Ph.D., M.D., *Chief, Endocrinology Branch, National Cancer Institute;* Endocrinology

LEON JACOBS, Ph.D., *Chief, Laboratory of Parasitic Diseases, National Institutes of Health;* Medical Parasitology

LENT CLIFTON JOHNSON, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology;* Pathology

SOL KATZ, B.S., M.D., *Chief of Medicine, Mt. Alto Veterans Administration Hospital;* Pulmonary Disease

THOMAS JAMES KENNEDY, JR., B.S., M.D., *Special Assistant to Director, National Institutes of Health;* Medicine

ALBERT DAVID KISTIN, A.M., M.D., *Chief of Medicine, Beckley Memorial Hospital, Beckley, W. Va.;* Cardiology

MORRIS CECIL LEIKIND, M.S., *Chief, Historical Research Division, Medical Museum, Armed Forces Institute of Pathology;* History of Microbiology

THOMAS HODGE MCGAVACK, A.B., M.D., *Chief, Intermediate Service, Veterans Administration Center, Martinsburg, W. Va.;* Metabolic Disease

WALTER LEWIS NALLS, M.D., *Consultant, Veterans Administration Center, Martinsburg, W. Va.;* Pulmonary Disease

WILLIAM JACKSON PEEPLES, B.S., M.D., M.P.H., *Health Officer, Montgomery County, Md.*; Public Health Practice

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MATHEW ROSS, B.S., M.D., *Medical Director, American Psychiatric Association*; Psychiatry

STANLEY JAY SARNOFF, A.B., M.D., *Chief, Laboratory of Cardiovascular Physiology, National Heart Institute*; Cardiovascular Physiology

ALBERT SJOERDSMA, Ph.D., M.D., *Chief, Experimental Therapeutics Section, General Medicine and Therapeutics Branch, National Heart Institute*; Internal Medicine

PIERRE TULOU, M.D., *Chief, Pulmonary Laboratory, Veterans Administration Center, Martinsburg, W. Va.*; Pulmonary Function

THOMAS GREYDON WARD, M.D., Dr. P.H., *Director, Virus Research Department, Microbiology Association, Inc.*; Microbiology

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WILLIAM SHOULDEN APPLE, Ph.D., *Executive Director, American Pharmaceutical Association*; Pharmaceutical Organizations

GEORGE FRANCES ARCHAMBAULT, Ph.G., Ph.C., LL.B., Sc.D., *Chief, Pharmacy Branch, Division of Hospitals; Pharmacy Consultant, Office of the Surgeon General, United States Public Health Service*; Hospital Pharmacy

KARL BAMBACH, Ph.D., *Executive Vice-President, Pharmaceutical Manufacturers Association*; Pharmaceutical Industry

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CHARLES JELLEFF CARR, Ph.D., *Chief, Pharmacology Unit, National Institute of Mental Health*; Pharmacological Research

EDWARD GEORGE FELDMANN, Ph.D., *Director, Scientific Division, American Pharmaceutical Association; Chairman, Committee on "The National Formulary;"* Drug Standards

LOUIS EDWARD KAZIN, Phar.G., *Editor, "Drug Topics" and "Drug Trade News;"* Contemporary Pharmacy

MORRIS LOUIS YAKOWITZ, B.S., *Director, Division of Advisory Opinions, Bureau of Enforcement, Food and Drug Administration*; Drug Control

ASSISTANTS

ASSISTANTS IN RESEARCH AND INSTRUCTION

DAVID LYNDLE AMES, A.B., *Graduate Teaching Assistant in Geography*

WARREN DELAPLANE ASHBY, JR., A.M., *University Teaching Fellow in German*

DONALD OLIVER BAECHLER, B.E.E., *Graduate Teaching Assistant in Engineering*

CONCORDIA BORJA, M.S., *Sanders Fellow in Biochemistry*

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KANG OK CHO, M.D., M.S., *Research Fellow in Orthopedic Surgery*

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Barbara Allen Hart Decker, A.B., *Fellow in Physiology*
Peter Donnerstag, A.M., *University Teaching Fellow in German*
Olga Miskowiec Eaton, A.B., M.D., *Fellow in Medicine (Cardiovascular Disease)*
Grant Campbell Edwards, B.S., *Graduate Teaching Assistant in Chemistry*
David Bruce Evans, B.S., *Fellow (Trainee) in Physiology*
Mohammad Fatemi, A.B., *Graduate Teaching Assistant in Physics*
Lilien Filipovitch, A.B., *Graduate Teaching Assistant in Art*
Yu Bing Fok, M.S., *Fellow (Trainee) in Physiology*
Linda Lou Gallo, B.S., *Teaching Fellow in Biochemistry*
Irma Saenz Gedang, M.D., *Fellow in Anesthesiology*
Robert Gerety, A.B., *Sanders Fellow in Microbiology*
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Ralph Richard Gray, M.S., *Fellow in Biochemistry*
Michael Joseph Halberstam, A.B., M.D., *Fellow in Medicine (Cardiovascular Disease)*
Diane Davis Henderson, A.B., *Graduate Teaching Assistant in French*
Richard Stuart Hill, B.S., *Graduate Teaching Assistant in Chemistry*
James Alden Hoage, A.B., *Graduate Teaching Assistant in History*
Stephen August Hoenack, A.B., *Graduate Teaching Assistant in Economics*
Julian Hoptman, A.M., *Research Fellow in Microbiology*
Ann Hightower Hughes, A.B., *Graduate Teaching Assistant in Economics*
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Elsie Marie Karas, M.S., *Fellow in Microbiology*
Sidney Krome, A.B., *Graduate Teaching Assistant in English*
George Lady, A.B., *University Teaching Fellow in Economics*
Barbara Long, A.B., *Graduate Teaching Assistant in French*
John Charles Lyons, A.B., LL.B., *Research Assistant to Dean of National Law Center*
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James McIver, Jr., A.B., *Graduate Teaching Assistant in Physics*
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The Research Projects listed in this section are special projects which are set up for the specific purpose of attacking in an academic atmosphere problems submitted by the sponsoring agency. Cooperation between these projects and the various departments of instruction is as close as the nature and needs of the projects and departments will permit. The projects are listed in the order in which they were undertaken by the University.

THE ELECTRONICS RESEARCH PROJECT

The Electronics Research Project does work in the general fields of digital computer circuitry and logic, information storage and retrieval, and systems reliability. This project operates under contracts with the Department of Defense and under grants from the National Science Foundation.

NELSON THOMAS GRISAMORE, Ph.D., *Director; Professor of Engineering and Applied Science*
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THE LOGISTICS RESEARCH PROJECT

The purpose of the Logistics Research Project is to study logistics problems in all their aspects, to develop more efficient and expeditious methods of solving logistics problems, and to apply advanced data processing techniques to the solution of these problems. A large scale data processing facility is based upon an IBM 7090 computer. This project is operated under contracts with the Department of the Navy.

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THE HUMAN RESOURCES RESEARCH OFFICE

The Human Resources Research Office was established by means of a contract between the Department of the Army and The George Washington University to carry out an integrated Army program of human resources research. The work is conducted mainly in the fields of training methods and motivation, morale, and leadership. A research division and supporting services including a statistical office are located on the University campus. Five research units work under the command of Headquarters, Continental Army Command, and the technical supervision of the Washington Office. At present they are situated at Fort Knox, Kentucky; Presidio of Monterey, California; Fort Benning, Georgia; Fort Bliss, Texas; and Fort Rucker, Alabama.

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THE MANAGEMENT RESEARCH GROUP

The Management Research Group seeks to serve Government, Industry, and Commerce by contributing to the development and understanding of basic theory in the field of management. The Group also provides assistance in translating theory into practice.

Relationships and techniques important to modern information flow and managerial decision-making are stressed. The research conducted extends to system design, analysis of system performance, and the evaluation of practice in relation to managerial criteria.

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BIOMETRIC LABORATORY

The Biometric Laboratory applies mathematical techniques to biological problems related to mental health. It was established under a contract with the National Institutes of Health. The laboratory assists investigators throughout the United States in planning research and in analyzing data. The majority of these research projects concern the effects of drugs on behavior.

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THE NASA SPACE FLIGHT TELEMETRY PROJECT

This project involves the reduction and analysis of telemetry data from NASA's sounding rocket program. Machine processing procedures are utilized wherever practical. As part of the analysis phase of this contract, preflight mathematical models

are used to simulate the flight and predict the performance and characteristics of the rockets.

THOMAS B. WIGGINS, B.E.E., *Director; Lecturer in Engineering*

DRIVER BEHAVIOR RESEARCH PROJECT

The Driver Behavior Research Project was established through a grant awarded to the Department of Psychology by the Accident Prevention Division of the Department of Health, Education, and Welfare to develop driver training and rehabilitation procedures for increasing automobile safety. The project is investigating the use of programmed learning, group discussion, and mass communication in driver education.

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THE AREA REDEVELOPMENT PROJECT

The legislative history of the federal program to aid depressed areas (Area Redevelopment Act of 1961) and an appraisal of the program's implementation during the first two years after the legislation was enacted.

SAR A. LEVITAN, Ph.D., *Director; Research Professor of Labor Economics*

THE MENTAL COMPETENCY STUDY

The Mental Competency Study is investigating the operation of the law governing persons who, because of mental illness, are not competent to manage their affairs and need to have a guardian appointed. It will survey all noncriminal aspects of the subject. Investigations of actual practices are being conducted in selected communities throughout the United States. It is contemplated that the study will lead to recommendations for improvements.

HENRY WEIHOFEN, Ph.B., J.D., J.S.D., *Director; Visiting Professor of Law*

ELYCE H. ZENOFF, J.D., *Senior Scientist*

THE COMPUTER PROGRAMS RESEARCH PROJECT

The purpose of the Computer Programs Research Project is to develop general purpose computer programs for the Division of Research Grants of the National Institutes of Health. The current activities on the project include analysis of data gathering and data processing activities, examination of numerous specific problems for common elements that can be resolved by a single generalized computer program, and developing and testing these programs on the Honeywell 800 computer. In the near future, research efforts will be oriented toward producing limited information retrieval systems.

ROLAND R. BONATO, Ph.D., *Principal Investigator; Assistant Research Professor of Psychology*
MARGARET W. PRATT, A.B., *Senior Scientist*
JOSEPH D. DOLADAN, *Senior Scientist*
KENNETH C. YANG, A.B., *Research Scientist*

THE SOCIAL RESEARCH PROJECT

The Social Research Project conducts surveys and experiments with concentration on basic research underlying an approach to the solution of social problems. Current emphasis is on a descriptive survey of American drinking practices, under a grant from the National Institute of Mental Health.

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THE UNIVERSITY RECORD

SUMMER TERM 1962
FALL AND SPRING SEMESTERS 1962–63

DEGREES CONFERRED

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Jacque Cedric Young, Jr. — Md.
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Douglas Albert Van Dorpe — Va.
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MASTER OF ARTS

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Barbara Healy Edwards D.C.
A.B. 1960, The George Washington University

Julius Larry Efird Md.
B.S. 1955, Lynchburg College
M.S. 1956, University of Virginia

Elizabeth Mueller Ellis D.C.
A.B. 1942, University of Chicago

John Shearer Ervin Va
A.B. 1958, The George Washington University

Claudio Escarpenter Spain
Licenciado en Filosofía y Letras (Historia) and Licenciado en Derecho 1945, Barcelona University
Doctor en derecho 1946, Universidad de la Habana

Marvada Frank D.C.
B.S. 1949, American University

James Louis Gabriel Va
A.B. 1958, Catholic University of America

Caroline Bierier Gakenheimer D.C.
A.B. 1960, The George Washington University

Ann Bresstein Goodman N.J.
A.B. 1953, Radcliffe College

Robert Patrick Green Md
A.B. 1961, The George Washington University

Dermott Vincent Hickey Md
B.S. 1955, U. S. Naval Academy
B.S. in Met.E. 1944, Carnegie Institute of Technology
B.S. in Bus.Mgt.Eng. 1956, Rensselaer Polytechnic Institute

Woong Joe Kang Korea
A.B. 1961, Keonkuk University, Korea

Allen Hampton Kitchens Ark
A.B. 1957, University of Arkansas

Ingvar Werner Lindenblad Va
A.B. 1950, Wesleyan University
B.D. 1956, Colgate Rochester Divinity School

Margaret Mary McHale D.C.
A.B. 1959, The George Washington University

Don Evans McLeod Md
A.B. 1957, Duke University

Dorothy Elizabeth Milteer Va
A.B. 1957, Duke University

David Michael Moss Md
A.B. 1961, The George Washington University

Arthur Santos Moura Mass
B.S. in Mil.Sc. 1959, University of Maryland

Ruta Marija Penkiunas Md
A.B. in Ed. 1960, The George Washington University

Israel Rotkin Md
B.S. in Eng. 1933, B.E.E. 1934, City College, New York

Norman Salzberg Va
A.B. 1960, The George Washington University

Donald Graham Sillars Md
A.B. 1952, College of Wooster

Herbert Augustus Sims Texas
A.B. 1959, Texas Christian University

Herbert Wilson Stroup, Jr. Pa
A.B. 1940, Gettysburg College
B.D. 1943, S.T.M. 1949, Lutheran Theological Seminary

Ralph Edward Sullivan Va
A.B. 1961, The George Washington University

Elizabeth Ann von Kaenel D.C.
A.B. 1961, Bucknell University

MASTER OF SCIENCE

FEBRUARY 21, 1963

William Melrose Briggs, Jr. D.C.
B.S. 1955, University of Cincinnati

Ronnie Grey Clark Md.
A.B. 1960, Johns Hopkins University

Linda Lou Gallo Va
B.S. 1959, University of West Virginia

Alexis Arnaldus Gilliland Ind.
B.S. 1963, Purdue University

Marvin Hershkowitz Md
B.S. 1959, Florida State University

*Peter Friedrich Max Koehler D.C.
A.B. 1960, Harvard University

*Roger Joseph Labrie D.C.
B.S. 1952, Brown University

Eugene John Mandley D.C.
A.B. 1961, The George Washington University

Halina Grazyna Mendez-Cardenas Venezuela
A.B. 1962, Immaculata College

Edward Solomon Avensu Ghana
A.B. 1961, Miami University

Barbara Hart Decker D.C.
A.B. 1959, Middlebury College

George Richard Fanning Va
B.S. 1958, Concord College

Leonard Joseph Guarraia Va
A.B. 1960, University of Virginia

JUNE 5, 1963

[illegible] Philippines
B.Eng. Physics 1960, Cornell University

Eldon Eugene Taylor Md
B.S. 1957, The George Washington University

John Anthony Vozzo Md
B.S. 1962, University of Maryland

Edward J. Zapolski Va
B.S. 1958, The George Washington University

* Degree requirements completed summer 1962

Arnold Kaplan D.C.
B.S. 1961, City College, New York
Robert Bernard Katzen Pa.
B.S. 1961, Philadelphia College of Pharmacy and Science
William Lowndes McLaughlin D.C.
B.S. 1949, Hampden-Sydney College
Christyna Emma Mecca Md.
B.S. 1960, The George Washington University
Mervin Orlando Parker, Jr. D.C.
B.S. 1958, University of Notre Dame
George Rabchevsky D.C.
B.S. 1961, American University
Charles Wesley Swisher D.C.
A.B. 1962, The George Washington University
Robert Tomchick D.C.
B.S. 1951, Waynesburg College
Artrice Frissell Valentine Va.
B.S. 1956, Hampton Institute
Willis Boly Wheeler Va.
B.S. 1961, The George Washington University
Mary Eleanor Wise D.C.
B.S. 1960, Valparaiso University

MASTER OF FINE ARTS

FEBRUARY 21, 1963

*Harvey Wayne Peterson Md.
A.B. 1952, The George Washington University
Richard Hawkes Shorten Va.
A.B. 1956, University of Utah
Carolyn Richmond Terry Va.
A.B. 1950, University of California

JUNE 5, 1963

Eleanor Claire Allen Va.
A.B. 1960, College of William and Mary

THE SCHOOL OF MEDICINE

DOCTOR OF MEDICINE

JUNE 5, 1963

William Anderson Barclay Pa.
Harry Carl Beaver Pa.
B.S. 1958, Wheaton College
Fenwick Philip Bradley Va.
Joel Douglas Brown Md.
(With distinction)
Blackwell Smith Bruner D.C.
Frank Maurer Buckingham Va.
A.B. 1954, University of Nebraska
Thomas Edward Bucknell Calif.
B.S. 1958, San Diego State College
James Shannon Butler N.J.
B.S. 1958, Juniata College
John Flanagan Bynum Calif.
A.B. 1959, Stanford University
Walter James Kilburn Clothier, Jr. Va.
B.S. 1957, Carroll College
Allen Barry Cohen Md.
(With distinction)
A.B. 1960, The George Washington University
Paul Gary Cohen Va.
A.B. 1959, University of Buffalo
Michael Edward Colella N.Y.
A.B. 1959, Hamilton College
Quay Bradley Crandall Wash.
B.S. 1959, Washington State University
Ronald Anthony D'Alonzo Pa
A.B. 1959, Washington and Jefferson College
Steven Randolph Dear Calif.
A.B. 1959, University of California
Frank Denaro, Jr. N.Y.
B.S. 1959, College of William and Mary W.Va.
Edward Karl Denison Pa.
William Henry Dermody III Colombia
B.S. 1959, University of Scranton
Esteban Diaz-Granados Colombia
A.B. 1954, Colegio Del Rosario, Colombia
B.S. 1959, Fordham University N.J.
Leslie Dornfeld Pa.
A.B. 1959, Rutgers University N.J.
Walter John Fagan N.Y.
A.B. 1959, LaSalle College
Richard Stanley Finn D.C.
B.S. 1954, Rutgers University Md.
Gerald Michael Fleischner
A.B. 1959, Lafayette College Md.
Warren Hillary Foer D.C.
Joel Siegfried Gans N.C.
B.S. 1957, Bethany College W.Va.
David Henry Goodman Va
A.B. 1959, University of Pennsylvania Va.
Peter Lyon Greenberg
A.B. 1959, Johns Hopkins University
Carolyn Joyce Hair
A.B. 1959, Woman's College of the University of North Carolina
Jack Wayne Harvey
B.S. 1959, The George Washington University
Robert Mallard Hussey
Robert Wayne Hudson II
B.S. 1959, The George Washington University

* Degree requirements completed summer 1962

Charles Jacobs Hoffman — Md.
B.S. 1959, The George Washington University

Martin Ira Horowitz — N.J.
A.B. 1959, Rutgers University

Leslie Morris Hovey — Calif.
A.B. 1959, University of California

Ray Thomas Huffman — Ohio
B.S. 1956, Bowling Green State University

Stanley Richard Huffman — Ky.
B.S. 1959, University of Kentucky

John Evans Hutton, Jr. — D.C.
A.B. 1953, Wesleyan University

Howard Lund Judd — Calif.

Barbara Marion Kadell — N.Y.
A.B. 1958, University of Michigan

Jerome Stovall King — D.C.
A.B. 1959, University of Virginia

Ralph Eddye Koldinger — Calif.
(With distinction)
A.B. 1959, Stanford University

John Collison Kruse — Ohio
A.B. 1959, Duke University

James Melvin Kuhlman — Mich.
A.B. 1959, University of Michigan

Anita Lao-Iff — Switzerland

Gerald Sylvan Lazarus — D.C.
(With distinction)
A.B. 1959, Colby College

Walter Jackson Lewis III — Ala.
A.B. 1955, Birmingham-Southern College

Sanford Philip Lyle — N.Y.
A.B. 1959, University of Rochester

Albert McBride — N.M.

William Spencer Meade — D.C.
B.S. 1957, The George Washington University

Keith West Merrill

Michael Frank Michelis — Canada

A.B. 1959, Columbia University — N.Y.

Meredith Hodes Miller — Va.
A.B. 1959, Johns Hopkins University

Thomas Folk Minas — Va.
(With distinction)
A.B. 1959, University of Arizona

Barry Moskin

B.S. 1958, M.S. 1959, The George Washington University — D.C.

Austin Lain Moede

A.B. 1959, University of California — Md.

Robert Mrkich

Robert O. Murray — Fla.

A.B. 1959, University of Utah — Utah

Robert Ross Peabody

A.B. 1958, Stanford University — Calif.

Joseph Ralph Polidoro

A.B. 1959, Rutgers University — Conn.

Jose Manuel Pou

B.S. 1958, Catholic University of Puerto Rico — Puerto Rico

Lawrence Theodore Purcell — Conn.
A.B. 1959, Dartmouth College

Anthony Graham Purpura — Md.
A.B. 1960, Colgate University

Robert William Rabbitt — Md.
A.B. 1959, Catholic University of America

James Worden Reed — D.C.

Henry Clay Reister III — D.C.
A.B. 1954, Princeton University

Eugene Lee Richardson — Mont.
B.S. 1959, Montana State College

John Norton Robinson — Md.
B.S. 1957, University of Maryland

Robert Paul Sacks — Md.
A.B. 1959, Bucknell University

Barney Sutton Saunders — D.C.
A.B. 1959, University of Colorado

Kenneth Edwin Schemmer — D.C.
B.S. 1959, Purdue University

Lloyd Eugene Sedgewick — Va.
A.B. 1959, University of Virginia

James Thatcher Shaw — Va.
B.S. 1959, Brigham Young University

Dennis Dwight Shepard — Oreg.
B.S. 1959, Oregon State College

Thomas Daniel Skelly, Jr. — Md.

Sherrill Jeane Slichter — Wash.
A.B. 1959, Washington State University

Mark Alexander Herbert Smith, Jr. — Va.
A.B. 1959, Virginia Military Institute

Rafael Antonio Suescum — Panama

Eugene Henry Sullivan — N.Y.
A.B. 1957, Williams College

Joseph Robert Svoboda — Mont.
B.S. 1960, Montana State College

Daniel Owen Taber — Va.
B.S. 1960, Syracuse University

Dennis DeVere Taggart — Utah
B.S. 1960, Utah State University of Agriculture and Applied Science

Russell Herman Tomar — D.C.
A.B. 1959, The George Washington University

William Nicholas Toomy — N.J.

Eugene Richard Trout — Calif.
A.B. 1959, University of California

George William Ward, Jr. — Va.
B.S. 1956, U. S. Military Academy

Neil Orin Ward — Ariz.
B.S. 1956, University of Arizona

Jerald Dell White — Wyo.
B.S. 1959, Brigham Young University

Michael James Wong — Calif.
A.B. 1959, Stanford University

DeVere Gareth Wooton — Utah
B.S. 1959, Brigham Young University

Elizabeth Bish Young — Mich.
B.S. 1959, Purdue University

THE LAW SCHOOL

BACHELOR OF LAWS

FEBRUARY 21, 1963

Don Tolherman Adams — Va.
B.C.E. 1957, University of Florida

*Charles Paul Ake — N.J.
B.S. 1955, Villanova University

*Ralph Joseph Alvey — D.C.
B.S. 1950, University of Colorado

Calvin Kolle Ashland — Md.
B.S. 1957, Iowa State University of Science and Technology

Patrick Charles Baker II — Va.
A.B. 1956, Catholic University of America

* Degree requirements completed summer 1962.

James Winfield Beatman
A.B. 1948, Oberlin College
A.M. 1949, University of Pennsylvania — Va.

•Egon Edward Berg
B.S. 1959, Rutgers University — D.C.

Barry Antonio Bisson
B.S. 1956, University of New Hampshire — N.H.

Arthur Edward Bound, Jr.
B.S. in B.A. 1953, University of Florida — Fla.

Edmund Brzozowski
B.E.E. 1950, The George Washington University — Md.

Joseph Lester Carter, Jr.
B.S. 1958, Maryland State Teachers College, Frostburg — Md.

Richard Michael Catalano
A.B. 1955, Bowdoin College
A.M. 1958, Fletcher School of Law and Diplomacy — Pa.

•Penn Benjamin Chabrow
B.S. 1960, Muhlenberg College — Va.

•Richard Wayne Collins
B.S. 1956, Oklahoma State University of Agriculture and Applied Science — D.C.

James Dowling Constantinople
A.B. 1957, Amherst College — Va.

George Madison Cooper
B.S. in E.E. 1957, Pennsylvania State University — Md.

Yelverton Cowherd, Jr.
B.S. 1956, University of Maryland — W.Va.

•Clayton Eugene Crawford
A.B. 1937, West Virginia Institute of Technology
A.M. 1949, Marshall University — D.C.

Sam Shaw Crutchfield, Jr.
A.B. 1960, The George Washington University — Fla.

Edwin Hassel Daniels
B.S. 1953, U. S. Coast Guard Academy — Md.

•John Edmund Dempsey
B.S. 1956, LeMoyne College — Va.

•William Horace Dodd, Jr.
A.B. in B.A. 1959, College of William and Mary — Va.

Robert James Doherty, Jr.
B.S. in Ch.E. 1957, Northwestern University — Hawaii

Clyde Stanley DuPont
B.S. 1959, Brigham Young University — N.Y.

Daniel Jay Edwards
A.B. 1957, Brown University — Ind.

Malcolm Koons Edwards
A.B. 1955, Wabash College — D.C.

•Richard Sailow Ehrlich
A.B. 1955, Harvard University — Va.

•John Pope Ellis
A.B. 1954, Allegheny College — Okla.

•Allan Malvin Ephraim
B.B.A. 1955, University of Oklahoma — Va.

Thomas William Flynn
B.S. in C.E. 1956, University of South Carolina — Colo.

•Thomas Joseph Gibson
B.E.E. 1956, Rensselaer Polytechnic Institute — Va.

•Galen Gerald Gillette
B.S. 1958, University of South Dakota — N.Y.

•Howard Morris Golob
B.B.A. 1958, Hofstra College — D.C.

Percy Edward Goody
A.B. 1954, University of Maryland — Ill.

Mark William Haase
A.B. 1960, Washington and Lee University — Md.

Glenn Bertram Harten
A.B. 1956, University of Maryland — Md.

William Kenneth Hayes
B.S. 1952, Fordham University — Va.

Harry James Haynes
M.D. 1938, The George Washington University — Va.

•Douglas Boyd Henderson
B.S. 1957, Pennsylvania State University — Md.

•Albert Carveth Hodgson
B.S. in I.E. 1957, Virginia Polytechnic Institute — Va.

•Dan Sherwin Hollon
A.B. 1949, American University
A.M. 1950, Columbia University — Idaho

•Richard D. Hughes
A.B. 1959, University of Idaho — Va.

•Stephen Steidinger Husting
B.S. in M.E. 1954, Purdue University — W.Va.

•Kenneth Elmer Jacobs
B.S. 1956, University of California — Va.

•Richard Julius Jamborsky
A.B. 1958, The George Washington University — Va.

Charles Henry Jennings III
A.B. 1951, University of Pittsburg
M.S. 1952, University of Denver — Utah

Charles William Johnson
A.B. 1955, Brigham Young University — Md.

Daniel Lynn Johnson
A.B. 1950, The George Washington University — Md.

•Phil Winburn Jordan
B.S.C. 1935, University of Georgia — Va.

Kevin Edward Joyce
B.S. 1956, Worcester Polytechnic Institute — Pa.

Ronald Carl Kamp
B.S. (M.E.) 1956, M.S. (M.E.) 1959, University of Illinois — Ohio

Charles Robert Kennington, Jr.
B.S. 1949, Kent State University
M.B.A. 1960, The George Washington University — Va.

•John Jaihyun Kim
B.S. 1956, D. C. Teachers College — D.C.

•Charles Vincent Kirchman
A.B. 1959, University of Marvland — Va.

•David Neal Kolisky
B.S. in E.E. 1956, Lafayette College — Conn.

John Robert Kraemer
A.B. 1960, Georgetown University — Va.

•Joseph Labowski
B.S. 1956, Pennsylvania State University — Md.

George Elwood Lamphere
B.S. 1952, Haverford College
B.S. in Bldg. Eng. and Const. 1954, Massachusetts Institute of Technology — Va.

Edwin Pierce Lattimer
B.S. 1959, University of Marvland — Md.

•Harry Walter Lerch
A.B. 1959, Wesleyan University — Md.

Eric Karl Lewis
A.B. 1955, University of Rochester — Md.

Albert Joseph Lechte, Jr.
B.S. 1957, University of Marvland — Va.

James William Love
B.Aero Eng. 1950, Catholic University of America — Md.

•George Dimitroff Matzureff
A.B. 1954, University of Illinois
A.M. 1957, Harvard University — Va.

Charles Irvin McClelland
B.S. 1955, Virginia Military Institute — Va.

Robert John McDonnell
B.S. in M.E. 1958, Drexel Institute of Technology — Va.

Angelo John Mele
B. Marine Eng. 1958, New York State Maritime College — Md.

George Alexander Mentis
B.S. 1947, Loyola College — Pa.

•Edward John Meros
B.S. 1953, Pennsylvania State University — Va.

•Jerry Bennett Milstead
B.S. in E.E. 1957, Virginia Polytechnic Institute

• Degree requirements completed summer 1962.

*Alfred Vincent Musumeci — N.Y.
B.M.E. 1956, Rensselaer Polytechnic Institute

*Thomas Walter O'Rourke — Ill.
B.S. 1959, Purdue University

Keh Soo Park — Mass.
A.B. 1959, Alfred University

*Sheldon Harold Parker — Va.
B.S. in Ch.E. 1957, City College, New York

Norman Selby Parks — Ky.
A.B. 1955, Transylvania College
A.M. 1957, Syracuse University

Alan Monas Perlman — Md.
A.B. 1960, The George Washington University

Jacob Bernard Pompan — N.Y.
B.S. 1948, U.S. Military Academy

*Holbrook Louis Potter — Va.
A.B. in Govt. 1951, The George Washington University

*Marvin Elliott Preis — Md.
B.S. 1958, University of Pennsylvania

*David Roy Pressman — Pa.
B.S. in E.E. 1959, Pennsylvania State University

*Kenneth George Preston, Jr. — Va.
B.I.E. 1959, Ohio State University

*Rudyard Kent Rapp — Va.
B.S. in I.E. 1957, Washington University

Arthur Irving Reade, Jr. — Mass.
A.B. 1959, Harvard University

John Ottem Reep — Va.
B.S. in I.E. 1957, University of North Dakota

Alfred Arnold Robinson — N.J.
B.S. in M.E. 1932, Texas Agricultural and Mechanical College

*Joseph Rober — Va.
B.M.E. 1957, Rensselaer Polytechnic Institute

Charles Wilhelm Sandell — Wash.
A.B. 1958, University of Washington

*Samuel Isaac Schiller — D.C.
A.B. 1952, Rice University

William Adolph Schuetz — Va.
B.S. in M.E. 1959, Drexel Institute of Technology

*Arthur Schwartz — Nebr.
B.S. in I.E. 1958, Iowa State University of Science and Technology

Richard Salvatore Sciascia — Md.
B.S. in E.E. 1949, Lafayette College

*Robert Warren Smith — Va.
B.E.E. 1955, Rensselaer Polytechnic Institute

Norman Leroy Stack, Jr. — Va.
B.S. 1957, University of Maryland

James Andrew Stanton — Ind.
A.B. 1959, Wabash College

Robert Vincent Staton — N.C.
A.B. 1958, University of North Carolina

*Lewis Bernard Sternfels — Conn.
A.B. 1955, B.S. 1956, Columbia University

*Robert L. Stone — Md.
B.S. 1958, Queens College

Raymond Stephen Strobel — Va.
B.S. in M.E. 1956, Washington University

Rex Logan Sturm — Nebr.
B.S. in I.E. 1959, Iowa State University of Science and Technology

Peter Albert Sturtevant — D.C.
A.B. 1953, Rollins College

*Vincent Edward Sullivan — Va.
B.Ch.E. 1958, Villanova University

John Lenney Sweeney — Md.
A.B. 1951, A.M. 1954, Michigan State University of Agriculture and Applied Science

*John Bernard Tacke — Wash.
A.B. 1956, St. Edward's Seminary
Ph.L. 1958, Gregorian University, Italy

Daniel Albert Taylor, Jr. — D.C.
A.B. in Govt. 1960, The George Washington University

*Peter Sargent Taylor — Kans.
A.B. 1959, Washburn University

Albert Ivan Vatske — Md.
A.B. 1959, University of Connecticut

Blair Pershing Wakefield — D.C.
B.S. 1941, University of Pittsburgh

*Donald Francis Walls — D.C.
A.B. 1954, M.B.A. 1959, Cornell University

Cora Emma Weeks — D.C.
A.B. 1957, Miami University

Christian Carl Westerman III — Texas
B.S. in Comm. 1955, University of Virginia

Kenneth Gordon Wheeless — Va.
B.S. in Ch.E. 1959, University of Arkansas

Fred Smith Whisenhunt, Jr. — D.C.
B.Ch.E. 1956, North Carolina State College of Agriculture and Engineering

*Richard Wiener — D.C.
A.B. 1950, Columbia University

*Helen Barbara Willette — N.H.
A.B. 1941, Syracuse University

Gerald Edward Williams — Ark.
B.S. in B.A. 1955, Delta State College

*John Adams Wing — Va.
A.B. 1958, Union College

*Milton Marvin Wolson — Md.
B.S. in Aero. Eng. 1959, University of Alabama

Roger Donald Young — Va.
A.B. 1957, Randolph-Macon College

*Eugene Carl Ziehm — Md.
A.B. 1959, University of Buffalo

Robert Joseph Zinn — Va.
B.S. 1958, M.S. 1959, Bucknell University

JUNE 5, 1963

Lewis Greene Aron — D.C.
B.S. 1956, Brown University

William Richard Beck — D.C.
A.B. 1960, University of Miami

Lawrence Joseph Bernard, Jr. — Md.
B.S. 1961, University of North Carolina

Richard Harris Berneike — Va.
B.S. in Ch.E. 1958, Purdue University

Terrell Colhoun Birch — Md.
B.E.E. 1959, The George Washington University

Willard Edward Bryant — Va.
B.S.E. 1958, University of Michigan

Raymond Frank Burghardt — Va.
A.B. 1960, Kenyon College

Frank Caccapuoti, Jr. — Va.
B.S. 1947, University of Notre Dame

George Polk Chandler — Md.
B.S. 1956, University of Tennessee

Dean Suter Clatterbuck — D.C.
A.B. in Govt. 1960, The George Washington University

William Branner Cridlin, Jr. — Va.
B.S. 1955, Virginia Military Institute

David George Curry — Md.
B.S. in Met. Eng. 1960, Washington University

James Clarke Davis, Jr. — Va.
B.S. in Eng. 1955, Brown University

Michael Harding Davis — Va.
B.S. 1958, Utah State University of Agriculture and Applied Science

Ronald Olson Dixon — D.C.
A.B. 1959, Brigham Young University

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* Degree requirements completed summer 1962

John Crow Duncan III — Va.
B.S. 1960, Tufts University

Paul Burns Ebers — Va.
B.S. 1959, Virginia Polytechnic Institute

Robert James Eichelburg — Va.
B.S. 1956, Fordham University

Jerome Eisner — Md.
B.S. 1953, The George Washington University
M.S. 1956, Georgetown University

Fred Jewell Engle III — Calif.
A.B. 1960, The George Washington University

Roger James Erickson — Va.
B.S. 1957, Wisconsin State College

Wallace Kermit Fetterolf — Va.
A.B. in Govt. 1950, The George Washington University

Howard Ernest Fischer — N.Y.
A.B. 1960, Hunter College

Joe Welsh Fleming II — Ark.
A.B. 1959, University of Arkansas

John Edward Gallagher — Mass.
A.B. 1959, The George Washington University

Stephen Herbert Galt — Md.
A.B. 1960, American University

George Freeman Gardner III — Del.
A.B. 1960, Dickinson College

Arthur Sellers Garrett — Pa.
B.Ch.E. 1959, Rensselaer Polytechnic Institute

Richard D. Godown — Md.
A.B. 1955, Lafayette College

Joel Sandor Goldhammer — Va.
B.S. in E.E. 1958, Carnegie Institute of Technology

Stephen Robert Grasson — Md.
B.I.E. 1959, Georgia Institute of Technology

Nelson Harry Greene — Md.
B.S. in C.E. 1949, Carnegie Institute of Technology
M.S.E. 1956, Johns Hopkins University

Gaylord Paul Haas, Jr. — Va.
B.S. in E.E. 1958, University of Notre Dame

Grayson Pollard Hanes — Va.
A.B. 1958, University of the South

Frank Bosley Haskell III — Md.
A.B. 1960, Wake Forest College

John Howard Holcombe — Ill.
B.S. in E.E. 1959, Iowa State University of Science and Technology

Charles Timothy Hopkins — Idaho
A.B. 1960, Stanford University

Richard Kay Jackson — D.C.
B.S. 1957, Iowa State University of Science and Technology

John Thomas Jenkins — D.C.
A.B. 1960, Duke University

Walter Frederick Johannemeier — Md.
B.S. 1956, Rose Polytechnic Institute

Jonathan Edwin Johnson — D.C.
B.Ch.E. 1959, M.B.A. 1960, Cornell University

Harold Frederick Kennedy — Idaho
A.B. 1960, University of Idaho

James Albert Kenney III — Va.
A.B. 1959, Dickinson College

Joseph Ernest Kenny — Va.
B.S. in M.E. 1956, University of Massachusetts

Thomas Healy Kirkpatrick — D.C.
B.S. 1958, University of Oregon

Robert Graham Knechtel — Va.
A.B. 1958, Cornell University

Allen Nordmark Knowles — Va.
B.S. in M.E. 1955, Iowa State University of Science and Technology

Michael Kovac — Va.
B.S. in I.E. 1959, Washington University

Charles Kellam Kraus — D.C.
B.S. 1956, Georgetown University

Benjamin David Krause — Md.
B.S. 1959, University of Maryland

Owen Lester Lamb — Va.
B.E.E. 1956, Rensselaer Polytechnic Institute

Thomas Raymond Lampe — Iowa
B.S. in I.E. 1959, Iowa State University of Science and Technology

Charles Harry Landesman — N.J.
B.S. 1960, Rutgers University

Kent Willford Larsen — Utah
A.B. 1960, University of Utah

Robert Joseph Madigan — Va
B.S. 1960, The George Washington University

Robert Louis Magnuson — Idaho
B.S. in B.A. 1960, University of Idaho

Luther Arnold Marsh — Va.
A.B. 1951, University of North Carolina

Roy Harold Massengill — N.C
B.S. in I.E. 1959, North Carolina State College of Agriculture and Engineering

Lawrence Benedict McClafferty — Md
A.B. 1957, Muhlenberg College

James Madison Meister — Va
B.S. 1956, Colorado State University

Lawrence Orndorff Miller — Md
B.S. 1954, University of Maryland

Donald Linwood Mooers — Maine
A.B. 1960, University of Maine

Edward Dennis Murphy — Va.
B.S. 1959, University of Notre Dame

James Glick Murray — Md.
B.S. in M.E. 1948, University of Maryland
M.S. in M.E. 1952, University of Washington
B.E.E. 1956, The George Washington University

Danny Alden Newland — Fla.
A.B. 1960, College of William and Mary

Donald Lane Otto — Iowa
B.S. in M.E. 1959, Iowa State University of Science and Technology

Bennett Pulley Peterson — Utah
B.S. in Acct. 1959, University of Utah

Richard Franklin Record, Jr. — Ill
B.S. 1959, Georgetown University

Leslie Adrian Roberts — Va
A.B. 1958, University of Texas

Jack Wright Robinson — Tenn.
B.S. 1955, University of Tennessee

Bobby Wayne Rogers — N.C
B.S. in C.E. 1959, North Carolina State College of Agriculture and Engineering

Roger Dean Rowland — La
A.B., B.S. in Ch.E. 1956, University of Texas

Charles Salzberg — Va
A.B. in Govt. 1960, The George Washington University

Howard Shelton Schwartz — Va
B.B.A. 1959, University of Miami

Edward Allen Shepherd, Jr. — Md
B.S. 1960, University of Maryland

John Lewis Sousa — R.I
A.B. 1960, Boston University

Alan Thurman Spiher, Jr. — Va.
A.B. 1959, University of California at Los Angeles

Richard Carlton Steinmetz, Jr. — Va
B.S. in M.E. 1957, Purdue University

Gerald Fairlie Stevens — Conn
A.B. 1960, University of Connecticut

Robert Emmet Sullivan — N.H
A.B. in B.A. 1949, University of Maine

William Edwin Swope — N.M
A.B. 1958, University of New Mexico

Robert Keith Thompson — Va
B.S. 1960, Temple University

Donald Roger Tindal — Va.
B.S. 1954, University of Maryland

Michael Francis Tucker — Del.
A.B. 1960, University of Delaware

Robert Paul Tucker — Md.
A.B. in Govt. 1960, The George Washington University

Kaleb Udui — Palau Islands
A.B. 1960, The George Washington University

Nancy Blair Viccellio — Va.
A.B. 1934, Meredith College
A.M. 1939, University of Virginia

Richard James Vipond — Iowa
A.B. 1961, The George Washington University

Charles Edward Wallis, Jr. — Ohio
B.S. 1959, Northwestern University

John William Whisler — Va.
B.S. in Chem.T 1957, Iowa State University of Science and Technology

William August Wildhack, Jr. — Va.
B.S. 1957, Miami University

Eugene Bruce Woodruff — Va.
B.S. 1954, University of Michigan
M.S. 1957, Purdue University

Joseph Sutherland Wright — Ill.
A.B. 1960, Beloit College

Jon Leonard Zoole — N.Y.
A.B. 1960, Duke University

JURIS DOCTOR

FEBRUARY 21, 1963

*Anthony Albert Abato, Jr. — Md.
A.B. 1955, University of Maryland

Andrew Joseph Beck — Va.
B.S. in C.E. 1956, Virginia Polytechnic Institute

*Thomas Akroyd Clingan, Jr. — Md.
(With distinction)
B.S. 1950, U. S. Coast Guard Academy

Kenneth Alfred Cocks — Va.
B.S. in I.E. 1959, Washington University

*Hal Dean Cooper — Iowa
B.S. in M.E. 1957, Iowa State University of Science and Technology

Benjamin Franklin Edwards II — Md.
A.B. 1950, Yale University

James Elliott Espe — Va.
B.S. in M.E. 1960, Bradley University

*Ford Franklin Farabow, Jr. — S.C.
B.S. in Ch.E. 1959, Clemson Agricultural College

Richardson Blackburn Farley — Va.
B.S. in I.E. 1952, B.S. in M.E. 1959, Pennsylvania State University

Jay Marvin Finkelstein — N.J.
B.S. in E.E. 1959, Drexel Institute of Technology

*William Ray Hinds — Va.
B.M.E. 1956, Auburn University

*Marvin Eugene Jacobs — Pa.
B.S. in Ch.E. 1959, Drexel Institute of Technology

Jack LeRoy Lahr — Va.
B.S. in M.E. 1956, University of Toledo

*Saylor LeRoy Levitz — Va.
B.S. 1956, Pennsylvania State University

Allan Osmo Maki — Va.
B.S. 1959, University of Wisconsin

Thomas Hugh Monahan — Va.
B.S. 1956, Richmond Professional Institute

*Ronald David Morris — Va.
B.S. in Ch.E. 1955, University of Tennessee

Richard Duane Multer — Md.
B.S. (M.E.) 1956, University of Colorado

*Robert Steven Pinkstaff — Va.
B.S. 1959, Iowa State University of Science and Technology

Howard B. Rockman — Md.
B.S. in M.E. 1959, Drexel Institute of Technology

Frederick Thomas Schornhorst — Va.
A.B. 1956, State University of Iowa

James Elbert Snead III — N.M.
B.S. in E.E. 1959, University of New Mexico

*Thomas Richard Spradlin — Okla.
A.B. 1959, The George Washington University

*Marvin Robert Stern — Md.
B.S. in Ch.E. 1958, Drexel Institute of Technology

Donald Cleveland Turpen — N.M.
B.S. 1959, University of New Mexico

Glenn Franklin Young — Md.
B.S. 1953, U. S. Coast Guard Academy

JUNE 5, 1963

Joseph Lyon Brand — Ohio
A.B. 1958, University of Michigan
A.M. 1959, Ohio State University

Milton Harold Copeland — Calif.
A.B. 1958, A.M. 1960, Abilene Christian College

Lawrence George Kastriner — Va.
A.B. 1954, B.S. 1955, M.S. 1959, Columbia University

Don Walter Martens — Va.
B.S. in Min.Eng. 1957, University of Wisconsin

Thomas Dean Phelps — Iowa
B.S. 1959, Iowa State University of Science and Technology

Louis Pohoryles — N.Y.
B.B.A. 1959, City College, New York

Thomas Alvord Quinn — Va.
B.S. 1959, Brigham Young University

Douglas Vernon Rigler — Md.
B.S. 1956, U. S. Naval Academy

* Degree requirements completed summer 1962.

GRADUATE SCHOOL OF PUBLIC LAW

MASTER OF LAWS

FEBRUARY 21, 1963

Leon Shampain — D.C.
A.B. 1949, The George Washington University
LL.B. 1951, University of Miami

JUNE 5, 1963

George Daniel Bruch — Va.
Ph.B. 1938, Xavier University
LL.B. 1941, Georgetown University

Ian Arbuckle Calvert — D.C.
A.B. 1959, Rice University
LL.B. 1962, University of Houston

Harry Levi Mead, Jr. — Fla.
A.B. 1955, LL.B. 1958, Harvard University

Richard Warren Metz — Mo.
A.B. 1959, Westminster College
LL.B. 1962, Duke University

William David Newbern — Ark.
A.B. 1959, LL.B. 1961, University of Arkansas

John Bernard Tacke — Idaho
A.B. 1956, St. Edward's Seminary
LL.B. 1963, The George Washington University

MASTER OF COMPARATIVE LAW

FEBRUARY 21, 1963

*Debebe Hurissie — Ethiopia
Diploma 1955, University College of Addis Ababa, Ethiopia

*Legese Woldemariam — Ethiopia
Diploma of Law 1958, University College of Addis Ababa, Ethiopia

JUNE 5, 1963

Majeed Hamad Al-Najjar — Iraq
LL.B. 1950, University of Baghdad College of Law

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

FEBRUARY 21, 1963

Ovidio Manuel Giberga — Cuba
A.B. Sc. 1938, Institute of Havana, Cuba
Doctor of Laws 1942, University of Havana, Cuba

DOCTOR OF JURIDICAL SCIENCE

JUNE 5, 1963

Karl Everett Wolf — Conn.
B.S. 1943, U. S. Military Academy
LL.B. 1953, University of Pennsylvania
DISSERTATION: "State Taxation of Government Contractors"

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* Degree requirements completed summer 1962.

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

BACHELOR OF CIVIL ENGINEERING

FEBRUARY 21, 1963

*Winston WeeHong Mah	Va.	*Hans Walter Eugene Zassenhaus	D.C.

JUNE 5, 1963

David Anthony Beale	Va.	Albert John Martina	Va.
Barry Sheldon Blumberg	N.Y.	Andreas George Papanaoum	Greece
Fred Ellis Hood, Jr.	D.C.	B.S. 1960, Wagner College	
Allyn Eric Kilsheimer	D.C.	Robert Alfred Theobald III	Va.

BACHELOR OF ELECTRICAL ENGINEERING

FEBRUARY 21, 1963

Laurence Almon Barnes, Jr.	Va.	Vernon LeRoy Krueger	Md.
Donald Lee Eddins	Md.	Faith Rawdon Smith	D.C.
Robert Richard Fontaine	Md.	Marion Russell Stogsdill	Md.
Oscar Milton Kramer	D.C.	Kenneth Wai Yee	D.C.

JUNE 5, 1963

Alan Joseph Bomberger	D.C.	Graybill Paul Landis	D.C.
Eliot Dorsey Cohen	Md.	Raphael Vincent Lupo	Va.
Jack Thomas Coulson	Va.	Edward Fielding Magee	Va.
Arthur Nicholas Crenshaw, Jr.	Va.	Donald Abram Miller	Mass.
George Everett DeVilbiss	Texas	George Lawrence Morgan, Jr.	Va.
Harvey Joseph Flatt	D.C.	Mendel Lazear Peterson, Jr.	Va.
James David George	D.C.	Thomas Leo Robertson, Jr.	D.C.
Robert Hanford Gerber	Md.	B.C.S. 1943, Southeastern University	
Nguyen Ha Hai	Viet Nam	Clifford Bundy Stearns	D.C.
Robert Bruce Hirsch	N.Y.	Jerome Harvey Steffel	Md.
Carroll Milton Horn	Va.	Paul Ernest Treynor	Md.
Erling Robert Jacobsen	Va.	Charles Martin Uvaas	Md.
Raymond Edward Kelly	Va.	Barbara Louise Varga	Pa.
Francis Michael Klisch	Va.	Philip Walcoff	D.C.
Robert Konstantine Kopsidas	D.C.	Edward Fletcher Walker, Jr.	Va.
William Emil Kotwas	Md.	Elmore Charles Williams	Va.

BACHELOR OF MECHANICAL ENGINEERING

FEBRUARY 21, 1963

George Imei Izumi	D.C.	Ihor Myroslav Procinsky	Md.
Sherman Leeson Min	D.C.	Peter Kiefer Spangler	Md.

JUNE 5, 1963

Donald Lee Blount	Va.	Robert Damon McCalley	D.C.
Arthur Lindsey Howard	Va.	Hubert Dean Wood	Md.
Douglas Linwood Jones	Va.		

BACHELOR OF SCIENCE IN ENGINEERING

FEBRUARY 21, 1963

John Emory Holt	Md.	Manuel Louis Kramer	Md.
Carl Richard Johnson	Md.		

* Degree requirements completed summer 1962.

JUNE 5, 1963

John Richard Calarco (With distinction) — Md.
Lee Kaminetzky (With distinction—Special honors in Mathematics) — D.C.
Stephen Henry Rich — N.Y.
Raul Julio Velarde — Peru
John Herbert Whitney — Va.

MASTER OF ENGINEERING ADMINISTRATION

FEBRUARY 21, 1963

John Davis Albright — Md.
B.S. in E.E. 1944, M.S. in E.E. 1947, Georgia Institute of Technology
Marvin Roy Andrews — Md.
B.M.E. 1953, Rensselaer Polytechnic Institute
*Thomas Neal Bakke — Mo.
A.B. 1948, University of Denver
B.S. 1952, U. S. Naval Academy
Arthur Martin Bennett — Md.
B.E.E. 1957, Rensselaer Polytechnic Institute
*Cyril Kennedy Chappuis — Va.
B.S. in E.E. 1928, Tri-State College
*Daniel Elsworth Cook — Wash.
B.S. in E.E. 1930, Washington State University
Lloyd Aulton Easterling — Miss.
B.S. in M.E. 1948, Mississippi State University
*Earl William Estelle — Md.
B.S. 1953, Fairleigh Dickinson University
B.S. 1954, Pennsylvania State University
Jerome Freibaum — Md.
B.E.E. 1951, City College, New York
*Warner Henry Halliday — Canada
B.S.C. (E.E.) 1950, University of Manitoba, Canada
*Thomas Junior Hutchison — Kans.
B.S. 1947, Kansas State University
*Harold Lee James — Texas
B.S. in Aero.Eng. 1948, Agricultural and Mechanical College of Texas
*James Stephan Joska — Mo.
B.S. in E.E. 1958, University of Colorado
Edward Henry Kerins, Jr. — Md.
B.S. in I.E. 1956, University of Rhode Island
*Donald Van McDougall — N.H.
A.B. 1948, University of California
Joseph Fannin Rice — Va.
B.S. in C.E. 1949, University of Kentucky
Edward Clarence Rodgers — Va.
B.S. in E.E. 1957, Duke University
Jack Wilbur Rupe — Md
B.S. 1949, U. S. Naval Academy
Jack Powell Stell — Va
A.B. 1939, Rice University
A.M. 1943, University of Houston
B.E.E. 1955, The George Washington University
Homer Eugene Violette — Md
B.M.E. 1952, Catholic University of America
*Robert Edward Whiting — Ga.
B.S. 1950, U. S. Military Academy
James Edward Wilson, Jr. — Md
B.S. in Ch.E. 1953, University of Maine
Kenneth Oscar Yung — Md
B.S. in M.E. 1954, University of Buffalo

JUNE 5, 1963

Frank William Bennett — Md.
B.E. 1948, Yale University
Melvin Berkowitz — Md.
B.C.E. 1948, City College, New York
George Raymond Bierman — Va.
B.M.E. 1955, The George Washington University
James Ford Bills — Mich.
B.S. 1940, U. S. Coast Guard Academy
Sebastian James Cavarino — Md.
B.S. in Ch.E. 1943, Northeastern University
Richard Stuart Chamberlin — Md.
B.S. in E.E. 1958, Lehigh University
Luther Gordon Croft — Md.
B.E.S. 1956, Johns Hopkins University
John Joseph Curren — N.Y.
B.E.E. 1958, Manhattan College
Jesse D. Dobbins — Va.
B.S. 1950, University of Tennessee
Frank Raymond Early — D.C.
B.S. in Met.E. 1959, University of Pennsylvania
Harry Eugene Ellerman — Md.
B.S. in E.E. 1942, Ohio University
John James Gabriel — Va.
B.S. in E.E. 1959, Lehigh University
Charles Albert Good — Va.
B.S. 1951, John Carroll University
Chauncey Lee Harshfield — Kans.
B.S. 1954 U. S. Naval Academy
Edward Jettner — Va.
M.E. 1951, Stevens Institute of Technology
Archie Leyton Julian — Team.
B.S. 1942, U. S. Naval Academy
George Levine — Md.
B.E.E. 1951, New York University
William Frederick List — Md.
B.E. 1952, B.S. 1960, Johns Hopkins University
Howard George Norseth — D.C.
B.S. 1951, Case Institute of Technology
Ernest Nussbaum — Va.
B.C.E. 1950, Cooper Union
George Goldston Palmer — Md.
B.S. 1950, U. S. Naval Academy
Charles John Papuchis — D.C.
B.S. in M.E. 1956, Northeastern University
Henry Garnett Plaster — Md.
B.S. 1950, Duke University
Rene Eric Rosenthal — Ohio
B.S. in E.E. 1954, Drexel Institute of Technology
M.S. in E.E. 1959, University of Pennsylvania
John Adrian Saathoff — D.C.
B.S. 1953, University of Illinois
William Lamson Soule, Jr. — Va.
A.B. 1953, Harvard University
Robert Ellis Swift — Va.
B.S. in Eng. 1959, University of Connecticut
Robert Wilbert Wills
B.S. in M.E. 1951, West Virginia University

* Degree requirements completed summer 1962.

MASTER OF SCIENCE IN ENGINEERING

FEBRUARY 21, 1963

Charles Noel Adkins — Va.
B.S. in Eng. Physics 1957, University of Oklahoma

Irving Gary Bard — Pa.
B.S. 1959, University of Pennsylvania

Ronald Feit — Md.
B.S. in M.E. 1956, University of Texas

Jerome Perry Feldman — Md.
B.M.E. 1959, Polytechnic Institute of Brooklyn

Jerry Gerald Gonick — Md.
B.E.E. 1959, Rensselaer Polytechnic Institute

John Frederick Hillmann — Va.
B.S. in N.A. 1956, Webb Institute of Naval Architecture

Robert Stewart Johnson — Md.
B.S. 1959, Webb Institute of Naval Architecture

Nicholas Kyriakopoulos — D.C.
B.E.E. 1960, The George Washington University

Oles Lomacky — Md.
B.C.E. 1956, City College, New York

Robert Tenent McIntyre — Va.
B.E.E. 1956, Alabama Polytechnic Institute

John Preston Millard — Calif.
B.S. 1958, University of Maryland

Joseph Anthony Signorelli — Va.
B.S. 1954, Webb Institute of Naval Architecture

Thomas Bredon Wiggins III — Md.
B.E.E. 1959, The George Washington University

JUNE 5, 1963

Robert Allen Anderson — Md.
B.S. in Eng. 1953, University of Connecticut

Richard William Burns — N.Y.
B.E.E. 1960, Rensselaer Polytechnic Institute

Gonzalo Salas Castro — Chile
Title of Civil Engineer 1961, Universidad Catolica de Chile

Richard Edward Dame — Md.
B.C.E. 1960, The George Washington University

Dean Donald Durnan — Va.
B.S. in Ch.E. 1957, University of Washington

Paul Gerin Fahlstrom — Md.
B.Aero.Eng. 1953, University of Minnesota

Harold Johan Haynes — Wash.
B.S. in M.E. 1957, University of Washington

Nils Einar Hveding — Md.
B.S. 1960, University of Maryland

Alec Nathan Lichtman — Md.
B.M.E. 1959, The George Washington University

Frank Laddie Marek — Ill.
B.S. in E.E. 1958, Illinois Institute of Technology

Robert Milton McKechnie III — Va.
B.S. in E.E. 1959, Agricultural and Mechanical College of Texas

Robert Jackson Miller, Jr. — Md.
A.B. 1957, Vanderbilt University

Charles Frank Olsen — W.Va.
B.S. 1954, U. S. Naval Academy

Peter Butler Perry — N.Y.
B.E.E. 1957, Rensselaer Polytechnic Institute

Jerome Simonoff — Md.
B.E.E. 1959, City College, New York

Malcolm Rucj Uffelman — Va.
B.E. 1957, Vanderbilt University

Claude Michael Weil-Malherbe — Md.
B.S. 1959, University of Birmingham, England

Edward Anderson Wilkinson, Jr. — Ala.
B.S. 1955, U. S. Naval Academy

Herbert Swann Wilkinson II — Md.
B.E.E. 1961, The George Washington University

Woo Yeh — Va.
B.S. in E.E. 1934, Chiao Tung University China

THE SCHOOL OF PHARMACY

BACHELOR OF SCIENCE IN PHARMACY

FEBRUARY 21, 1963

*Gabrielle Frances Butler — Va.
Roger Fenton Collins — Va.
*Alvin Lerin — D.C.

Karen Kiest Goumas — D.C.
Stanley Morton Sherman — Md.

JUNE 5, 1963

Barbara Ann Baker — Md.
(With distinction)

Ronald Anthony Browning — D.C.

Stanley Joel Burns — Md.

Lawrence Bampfylde Cohn — D.C.

Anthony Joseph De Luca — Md.
(With distinction)

John Jay Freeman — Va.

Alexander Leeds — D.C.

Robert Tillman Manning — D.C.

Dorothy Alvina Meissner — D.C.

John Richard Miller — Md.

Wilhelm-Hermann Reibert — Germany

Robert Fulton Ruhl — Md.

James Herbert Scherff — Va.

Vera Cecilia Wünsch-Stirling — D.C.

* Degree requirements completed summer 1962.

THE SCHOOL OF EDUCATION

BACHELOR OF ARTS IN EDUCATION

FEBRUARY 21, 1963

•Hetty Beatty Adams	Va.	Mary Electa Holmberg
•Virginia Niblo Browder Baldwin	Va.	•Horace Clinton Lilley
•Peter Benavage	Va.	Patricia Martin Lynn
Henri Joseph Bernard	Md.	•Patricia Callighan Montgomery
Leah Beyda	D.C.	Francis Wilson Moseley
Susan Peck Bromfield	Conn.	Linda Kay O'Donnell
•William Neitzey Cogswell, Jr.	Va.	Aileen Rich Pheasant
•Nancy Elizabeth Davidson (With distinction)	D.C.	•Margaret Herr Price
William John Delaney, Jr. (With distinction)	Pa.	•Mildred Howard Reed
Judith Irene Dozier	Fla.	•Nena Nettie Riegger
Elsa Abby Dreyfus	Md.	•Dorothy Mary Scavone
•Angelina Carli Fisher	Md.	•Lynne Transtrum Sluger
•Sherie Simon Gamberg	Del.	Margaret Hickey Stein
Mary Louise Gober	Va.	Eva Clark Tabor
•Jane Deborah Hickey	D.C.	Virginia Lundberg Taylor
Marie Mathelin Holloway	Md.	Mary-Ann Flanagan Valiulis
		•Juliann Wiencek

JUNE 5, 1963

Marcia Sue Anderson	N.Y.	Ian Jay Levy
Bonnie Susan Bair	Mass.	George John Milward
Helen Le Duc Bishop	Md.	Phyllis Emily Morton
Henry Francis Bosma, Jr.	Md.	Michael Edwin Napoliello
Eva Anne Brecher	D.C.	Betty Elaine Niles
Margaret Michelin Codispoti	Va.	Jacqueline Lee Norton
Barbara Joan Cohen	D.C.	Miriam Leonore Plaut
Carolyn Sue Copenhaver	Va.	Theodore Tyson Richards
Robert David Evans	Va.	Suzanne Darmont Ritter
Susan Gail Fabricant	N.Y.	Joan Mary Rizzi
Phyllis Virginia Fahrney	D.C.	Ruth Gail Robinovitz
Carole Susan Fein	Md.	Marilee Connerat Sanders
Jennifer Brooker Fischer	Va.	Susan Martha Scher
Roslyn Freishtat	D.C.	Rose Lynne Schwartz
Greta Pearl Friedman	Del.	Sandra Joan Servator
I'Leta Sykes Hankley	Va.	Carol Steele Shively
Susan Banes Harris (With distinction)	Va.	Gilda Simon
Sidney Robert Henderson	Nebr.	Freda Ruth Susman
June Gayle Howting	N.Y.	Elaine Paula Tanenbaum (With distinction)
Thomas Avery Jackson, Jr.	Va.	Tobyanne Devra Tarlow
Sondra Bryna Jacobson	N.J.	Judith Wallington
Belle Joyce Eichner Kass	D.C.	Beth Sheva Weyman
Constance Cohen Kessler	D.C.	Novella Gibson Whitehead
Barbara Dolores Lanyon	N.J.	

BACHELOR OF SCIENCE IN HOME ECONOMICS

FEBRUARY 21, 1963

Audrey Anderson Hankinson	Va.	Mary Moore Weaver
Alberta Mae Slaven (With distinction)	Wash.	

JUNE 5, 1963

Bonnie Louise Baylor	Va.	Ellen Garfield Plumpe (With distinction)
Charlotte Katherine Diltz	Va.	Elizabeth Boeve Schoonover
Edna Ruth Hufford	Miss.	Catherine Carroll Smallwood
Mandalene Swindell Marshall	Va.	

• Degree requirements completed summer 1962.

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

FEBRUARY 21, 1963

Theresa Mary Conroy — Maine
*Michael Edward Delnegro — Va.
Leonard Benjamine Gunsior — Pa.
*Wayne Nelson Smallwood — D.C.
*Woodbury David Weimern — Va
Raymond George Yarashus — Pa

JUNE 5, 1963

Carol Christina Carlson — D.C.
Ronald Anthony Cindrich — Pa.
Marjorie Jane Foster — Pa.
Anthony Joseph Fredicine — Pa.
Richard Joseph Hornfeck — D.C.
Bernard John Matta — Va.
Alan George Meravi — N.J.
Paul Joseph Munley — Pa
John James Papanicolas — D.C.
Frank Benjamin Pazzaglia — Pa.
Helen Rose Raab — D.C.
Charles Bass Reed — Pa.
Gary Gorman Scollick — Pa.

MASTER OF ARTS IN EDUCATION

FEBRUARY 21, 1963

*Frederick Dwight Atkinson — D.C.
A.B. 1925, Washington and Jefferson College
B.S. 1930, U. S. Military Academy
*Justin Frederick Baer — Md.
B.S. in Ed. 1956, Pennsylvania State College, Shippensburg
*Virginia Niblo Browder Baldwin
*Robert Barr — Va.
B.S. 1959, Kings College — Pa.
*Phoebe Lee Bauman
B.S. 1959, City College, New York — Md.
*Helen Talbert Belt
B.S. 1940, D. C. Teachers College — Va.
*Robert Carl Bengston
B.S. 1934, U. S. Naval Academy — Va.
*Paula Archer Bennett
B.S. 1954, Virginia State College — D.C.
*Annette Louise Bittermann
B.S. 1941, University of Illinois — D.C.
*Barbara Harriet Bowes
B.S. in Ed. 1954, Pennsylvania State College, Lock Haven — Md.
*Ann Isabel Brookins
B.S. 1937, Tennessee Agricultural and Industrial State University — D.C.
*William Allen Brooks, Jr.
A.B. in Ed. 1954, The George Washington University — Va.
Nannette Crouse Burleson
B.S. in Ed. 1935, University of Texas — Va.
*John Richard Burton
A.B. 1957, Columbia Union College — Md.
Franklin Wallace Cain
A.B. 1931, Salem College, West Virginia — Va.
Nancy Ann Calvert
B.S. 1957, Winthrop College — Va.
*Mildred Carter Carroll
B.S. 1957, D. C. Teachers College — D.C.
*Betty Cranford Church
A.B. 1953, Mary Washington College — Va.
*Finley Theodore Clarke, Jr.
A.B. 1940, Duke University — Va.
*Frankie Coleman Clarke
B.S. 1946, Florida Agricultural and Mechanical University — D.C.
Charles Corton Coley
B.S. 1934, U. S. Naval Academy — Okla.
Leroy Elmer Contee
B.S. 1949, Maryland State Teachers College, Bowie — Md.
Melvin Aaron Dann — Md
B.S. 1958, D. C. Teachers College
*Thomas McElvain Davis — Md
B.S. in Ed. 1958, University of West Virginia
*Lozelle Jenkins DeLuz — D.C.
B.S. in Ed. 1952, Winston-Salem Teachers College
*Genen Remy Derell — Va
A.B. in Ed. 1958, The George Washington University
*Lucile Edith Doyle — Md.
A.B. 1959, Washburn University
*Robert Reynolds Dungan — Va.
B.S. 1952, St. Joseph's College
*David Thomas Edwards — Pa.
B.S. 1951, Pennsylvania State College, Bloomsburg
*Dorothy Moss Ehlers — Md.
B.S. 1951, University of Maryland
*Frank Norman Ellis — Md.
B.F.A. 1956, Carnegie Institute of Technology
James William England — Va.
B.S. in P.E. 1953, The George Washington University
Ernestine Hagins Fehrman — Md.
A.B. 1936, Georgetown College
*Anne Noonan Ganser — Va.
A.B. 1954, Indiana University
Sandra Janet Goldsmith — Md.
B.S. 1956, D. C. Teachers College
Joyce Gary Green — D.C.
B.S. 1957, D. C. Teachers College
*Doris Ethelyn Griffin — Va.
B.S. 1941, D. C. Teachers College
Henrietta Rybczynski Gula — Md.
A.B. 1937, University of Chicago
*Harold Lee Hackney — Va
B.S. in Ed. 1956, University of West Virginia
Roger Wayne Hart — D.C.
A.B. 1958, The George Washington University
*Paul John Hartman — Va.
B.S. 1950, Pennsylvania State College, Shippensburg
*Stewart Samuel Henley — D.C
B.S. 1948, D. C. Teachers College

* Degree requirements completed summer 1962.

Linnea Backlund Holland — Va.
A.B. 1936, St. Olaf College

*Marie Celine Howell — D.C.
B.S. 1956, D. C. Teachers College

*Roger C. Hujik — Wis.
B.S. 1956, Wisconsin State College

Jessie Tufts Jackson — Kans.
A.B. 1943, Smith College

Michael Hyle Jesaup — Va.
A.B. in Ed. 1961, The George Washington University

*Helen Glaettli Jones — Md.
B.S. 1958, D. C. Teachers College

*Min Karras — D.C.
A.B. 1954, Bowling Green State University

*Annie Julia Kay — Ohio
A.B. 1958, Howard University

*Carolyn Elizabeth Kearney — Va.
A.B. 1953, Centre College

*Jerry Frederick Keeney — D.C.
A.B. 1956, Marshall University

James Edward Kern — Md.
A.B. 1958, Lycoming College

*William Henderson Kirvan — Va.
B.S. 1930, U. S. Naval Academy

*Larry Dale Klinger — Va.
A.B. 1953, Franklin and Marshall College

Carolyn Bauserman Kneisly — D.C.
A.B. 1961, Bridgewater College

*William Herman Landon — Md.
B.S. 1958, Maryland State Teachers College, Salisbury

*Helena Tillery Lendsey — D.C.
B.S. 1946, Hampton Institute

Jannie Laura LeVines — Va.
B.S. 1950, Florida State University

*George Richard Long — Va.
A.B. 1948, Dickinson College

*Alice Jane Maguire — Va.
A.B. in Ed. 1961, The George Washington University

Louise Watkins McAfee — D.C.
B.S. 1941, D. C. Teachers College

Shirley Moody McGalliarin — D.C.
B.S. in Elem.Ed. 1957, Elizabeth City State Teachers College

John Edgar McHale — Pa.
B.S. in Ed. 1958, Pennsylvania State College, Mansfield

*Thomas Francis Moran — D.C.
B.S. 1953, Maryland State Teachers College, Frostburg

*Betty Phippins Muirhead — Va.
B.S. 1953, Limestone College

*Charles Gilbert Nally, Jr. — Md.
B.S. 1952, D. C. Teachers College

*William Wallace Nurse — Va.
B.S. 1959, College of Education at Oswego

Jack Arthur Obermeyer — Ill.
B.S. 1937, U. S. Naval Academy
M.S. in Naval Constr. 1941, Massachusetts Institute of Technology

*Anne Marie O'Malley — Md.
A.B. 1954, Marywood College

*Marion Lotz Parker — Md.
A.B. 1937, University of Michigan

William Richard Perry — Md.
B.S. in Ed. 1952, Concord College

Alice Elizabeth Pharr — Va.
B.S. 1954, Winthrop College

*Edith Thelma Higgins Powers — Fla.
A.B. 1956, Berea College

Sandra Fay Price — Md.
B.S. 1957, D. C. Teachers College

*Mabel Jean Reid — N.C.
A.B. in Ed. 1960, The George Washington University

*Ruth Nutter Reid — Md.
B.S. 1956, Maryland State Teachers College, Bowie

*James Maurice Robinson — Md.
A.B. 1945, Virginia Union University

*William Granville St. Peter — D.C.
B.S. in Ed. 1958, Pennsylvania State College, Shippensburg

*Harold Stanley Sheridan — Va.
A.B. 1942, Ohio Wesleyan University

Vivienne Scarborough Shorter — D.C.
B.S. 1941, D. C. Teachers College

*Emma Williams Smart — D.C.
B.S. 1952, D. C. Teachers College

*Frances Larson Smith — Md.
B.S. in Ed. 1942, Maryland State Teachers College, Towson

Franklin Dow Smith — Calif.
B.S. 1937, University of California
M.B.A. 1953, Stanford University

Joan Heeney Sproul — Va.
B.S. 1954, Clarion State College

Clifford Andrew Stevens — Md.
B.S. 1958, Maryland State Teachers College, Frostburg

Philip Bessom Stiness — D.C.
B.S. 1931, U. S. Military Academy

*Nancy JoAnne Stratter — Md.
B.S. 1959, Pennsylvania State University

Carole Anne Sudwarth — D.C.
B.S. in Ed. 1958, D. C. Teachers College

*George Michael Sullivan — Va.
A.B. 1948, Hiram College

*Robert Gerald Sutton — Va.
B.S. in P.E. 1958, The George Washington University

*Allen Ambrose Swick — Md.
A.B. 1950, Shepherd College

Rebecca Ham Taylor — Okla.
A.B. 1949, South Carolina State College

*Ruth Power Thacher — W.Va.
A.B. 1934, West Virginia University

*Mary Lou Babcock Tolley — Md.
A.B. 1956, Duke University

*Alice Elizabeth Heath Tolliver — Va.
A.B. in Ed. 1957, The George Washington University

*Hoyt James Berry Turner — D.C.
B.S. 1927, University of Georgia

*Ellsworth George Van Orman — Va.
B.S. in Ed. 1936, University of Illinois

Marabeth Adams Varley — Va.
A.B. in Ed. 1959, The George Washington University

Edwin L'Amoureux Vergason — Va.
B.S. 1939, Bowdoin College

*Mamiruth Collins Walter — Va.
A.B. 1939, East Carolina College

Carol Jo Kennedy Williams — Md.
B.S. in Ed. 1960, University of Oklahoma

*Helen Ann Wilson — Md.
A.B. 1949, Bowling Green State University

*Peter Michael Wilson — Md.
B.S. 1959, Maryland State Teachers College, Frostburg

*Warfield Wilson — D.C.
B.S. 1959, Maryland State Teachers College, Frostburg

*Mildred Evelyn Young — D.C.
A.B. in Ed. 1936, University of Wisconsin

*David Irvin Zatz — Pa.
B.S. 1955, University of Maryland

JUNE 5, 1963

Joseph Patrick Albany — Va.
B.S. 1954, University of Bridgeport

Nicholas Ralph Anselmi
B.S. in P.E. 1961, The George Washington University

* Degree requirements completed summer 1962.

Thomas Mather Barnett — Md.
A.B. 1951, The George Washington University

John Douglas Bencich — Va.
A.B. 1957, University of Pittsburgh

Kathryn Agnes Kidd Bevis — Md.
B.S. in Ed. 1954, Ball State Teachers College

John Charles Biah — Md.
A.B. in Ed. 1960, The George Washington University

Benson Alvord Bowditch — N.H.
A.B. 1941, Swarthmore College

Verna Pogue Bullock — D.C.
B.S. 1943, D. C. Teachers College

Alfred Thomas Christensen — Va.
A.B. 1957, Eastern Nazarene College

John William Devault — Md.
B.S. 1959, Maryland State Teachers College, Frostburg

John Goodwin Dibble — Va.
A.B. 1941, University of California

Lloyd Richard Dille — Iowa
A.B. 1958, The George Washington University

Arthur Kendrick Ehle — Va.
B.S. 1957, U. S. Naval Academy

Mary Elizabeth Erling — Md
B.S. 1954, Maryland State Teachers College, Frostburg

Elizabeth Watson Fleming — N.C.
B.S. in Elem.Ed. 1943, Fayetteville State Teachers College

Vincent Joseph Ford — Md
Ed.B. 1951, University of Miami

Teresa Bishop Gardiner — Md
A.B. in Ed. 1959, The George Washington University

Howard John Gibson — D.C.
A.B. 1958, Valparaiso University

Mary Elizabeth Gookin — Md
A.B. 1943, Emmanuel College

Joanne Wells Hackney — Va
A.B. 1956, Columbia College, S.C.

Allan Jerome Halper — Md
B.S. 1959, D. C. Teachers College

Shirley Manheim Hennes — Ill.
A.B. in Ed. 1961, The George Washington University

Melvin Charles Holober — D.C.
A.B. 1940, The George Washington University

Roscoe Constantine Huggins — Va
B.S. 1932, U. S. Military Academy

Walter Charlie Hyvarinen — Md
A.B. 1958, Shepard College

Amil Victor Jinar — Md.
B.S. in Ed. 1957, Edinboro State College

Christine Paradise Johnson — D.C.
A.B. 1950, Clark College

Louise Allen Kemp — D.C.
B.S. 1940, D.C. Teachers College

Dalal Hanna Khleif — Lebanon
A.B. 1957, Beirut College for Women, Lebanon

Fonnie Black Ladd — Miss
B.S. in Ed. 1930, University of Tennessee

Barbara Williams LeBron — D.C.
B.S. 1961, D. C. Teachers College

Lois Reed Leuba — D.C.
B.B.A. 1958, Westminster College

Lucienne Gilberte Maillet — Maine
B.S. 1956, Bates College

Michael Martinez — Md.
A.B. 1952, University of New Mexico

James Clyde Masters, Jr. — Va.
B.S. 1944, U. S. Naval Academy

Charlie Tilman Mayo — D.C
A.B. 1949, Atlantic Christian College

Thomas McNiff — R.I.
B.S. 1944, U. S. Naval Academy

Dolores Mae Miller — Md
A.B. 1954, Hood College

Wayne Ivan Mumbert — Md
B.S. in Ed. 1956, Madison College

Barbara Joan Nalley — Md
B.S. in Ed. 1954, D. C. Teachers College

Roland Edwin Oelberg — Ill
B.S. in B.A. 1957, Northwestern University

Robert Francis Pallone — Md
B.S. in Ed. 1959, Indiana State College

Ann Colville Powel — Md
A.B. 1958, Wellesley College

Robert Warren Pruem — D.C
B.S. 1957, U. S. Naval Academy

Charles Rothouse — Va
A.B. 1932, City College, New York
LL.B. 1935, Brooklyn Law School

William Henry Rumsey — D.C.
B.S. 1951, Howard University

Katharine Margaret Shambaugh — Md
A.B. 1955, Oberlin College

Pauline Louise Storey — Va
B.S. 1935, Indiana University

Dorothy Utterback Strathern — Md
A.B. 1938, Hood College

Harrison Wendell Thomas — D.C
B.S. 1954, Maryland State Teachers College, Bowie

Evelyn Gaugh Turner — Va
A.B. 1934, Furman University

Gertrude Chesley Winston — Va
A.B. in Ed. 1955, The George Washington University

Herbert Field Woodbury — Va
B.S. in B.A. 1940, Rhode Island State College

ADVANCED PROFESSIONAL CERTIFICATE

FEBRUARY 21, 1963

Harry Gordon Botsford, Jr. — Md.
B.S. 1946, A.M. 1949, Boston University

Alma Louise Bushrod — Va.
B.S. 1947, Hampton Institute
A.M. 1949, New York University

Maryanna Fields — Va
A.B. in Ed. 1956, A.M. in Ed. 1960, The George Washington University

Clarence Perry Halstead — Va.
B.S. 1938, Hampton Institute
M.S. in Ed. 1948, University of Pennsylvania

Alice Parks Hearn — Va.
A.B. 1954, A.M. 1957, Marshall University

Margaret McIntyre — Va
B.S. 1939, New York College of Education at Buffalo
A.M. 1944, Northwestern University

*Charles Kresge Post — Md
B.S. 1957, Lycoming College
A.M. in Ed. 1960, The George Washington University

Jack Walter Robinson — Nev.
B.S. in Ed. 1957, A.M. in Ed. 1961, Arizona State College

* Degree requirements completed summer 1962

*Richard Carleton Sloop Md.
B.S. 1955, Madison College
A.M. in Ed. 1958, The George Washington University

*Laura Joan Swanson Md.
A.B. 1949, A.M. in Ed. 1951, The George Washington University

JUNE 5, 1963

Helen McClure Baker D.C.
A.B. 1935, Eastern Kentucky State College
A.M. in Ed. 1960, The George Washington University

Charles Raymond Heinz Ill.
B.S. in Ed. 1950, M.S. in Ed. 1959, Southern Illinois University

Manley Albert Miller Va.
A.B. 1957, Emory and Henry College
A.M. in Ed. 1960, The George Washington University

Jaroslav George Ontko Md
A.B. 1949, Columbia University
A.M. in Ed. 1958, The George Washington University

DOCTOR OF EDUCATION

FEBRUARY 21, 1963

Howard Palmer Hopkins Md.
M.S. 1936, Oklahoma State University of Agriculture and Applied Science
Ed.M. 1948, University of Maryland
DISSERTATION: "Professional Relations of State Leaders in Vocational Agricultural Education"

David Iwamoto D.C.
A.B. 1947, Walla Walla College
A.M. in Ed. 1952, The George Washington University
DISSERTATION: "Survey and Analysis of Certain Characteristics of Small High Schools in the United States"

Ruth Helm Osborn Va.
B.S. 1940, University of Minnesota
A.M. in Ed. 1946, The George Washington University
DISSERTATION: "Characteristics, Motivation, and Problems of Mature Married Women College Students: A Status Study of Selected Students at The George Washington University"

Alice Yeoman Scates D.C.
B.S. in Elem.Ed. 1936, Glassboro State College, New Jersey
Ed.M. 1950, Duke University
DISSERTATION: "Professional Preparation for Educators of Adults: A Survey of the Status and Content of Graduate Training Programs in Adult Education"

*Omar Mohammed Tumi Shebani Libya
A.B. 1955, Cairo University, Egypt
Diploma in Education 1956, Ain Shams University, Cairo, Egypt
A.M. 1959, American University
DISSERTATION: "An Analytical Study of Selected Aspects of the Pre-service Preparation of Prospective Libyan Secondary School Teachers as Provided by the College of Liberal Arts and Education of the Libyan University"

JUNE 5, 1963

John Gordon Boswell Va.
A.B. in Ed. 1953, A.M. in Ed. 1956, The George Washington University
DISSERTATION: "An Analysis of the Doctor of Education Degree Program at The George Washington University"

William Francis Brennan Md.
B.S. 1949, University of Scranton
A.M. in Ed. 1953, The George Washington University
DISSERTATION: "The Administration of Professional Field Experiences in Metropolitan School Systems"

Robert Whittington Eller Va.
B.S. 1951, D.C. Teachers College
A.M. in Ed. 1953, The George Washington University
DISSERTATION: "An Analysis of a Mid-career Degree Program for the United States Army War College 1960-1962"

Donald Thomas McNelis Md
B.S. in Ed. 1957, Pennsylvania State College, Bloomsburg
A.M. in Ed. 1959, The George Washington University
DISSERTATION: "The Maryland State Teachers Colleges A Status Study—1962-63"

Laban Peachy Va.
A.B. 1952, Eastern Mennonite College
Ed.M. 1958, University of Virginia
DISSERTATION: "An Investigation of Student Personnel Work in Small Colleges"

* Degree requirements completed summer 1962.

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

BACHELOR OF ARTS IN GOVERNMENT

FEBRUARY 21, 1963

Don Edward Bierman	D.C.	Hisakazu Ikejiri	Japan
*Munir Leon Bushara	Iraq	*John Logan Kemple	Oreg.
*Spyridon Andreas Couris	Greece	William Cornelius Lambert, Jr.	D.C.
Stanley Walter Dabrowski	Mass.	Nicholas John Nichols	D.C.
Roy Lindley DeVecchio	D.C.	Robert Eugene Nichols	Ohio
*Richard Allen Hardock	Va.	*David Hamilton Shinn	Wash.
*James Gary Hidden	Va.	*Helnut Earl Thiess	D.C.
*Charles Clement Huntley	N.J.	Thomas Arden Warden	W. Va.

JUNE 5, 1963

Michael Brinton Agather	Mont.	John Franklin Kasprzak	Va.
Robert Arthur Aleshire	Pa.	Marc Alden Klaben	D.C.
Richard Joseph Almeida	Fla.	Hedwig Klara Koehler	Germany
Robert Guy Black	Fla.	Leonard Jan Malamud	Md.
William Stevens Boeach	Va.	Robert Howison Miller, Jr.	Md.
Gaela Anne Caldwell	D.C.	Bianca Gloria Moscato	N.Y.
(With distinction)		Jeannette Harriet Parker	Fla.
Claire Amanda Carlson	Conn.	Linda Margaret Pfeifle	Md.
Jack Victor Cohen	Md.	Carolyn Ruth Pollard	N.J.
Robert Bonner Crawford	N.M.	Lee George Price	D.C.
John Gordon Day	Wis.	Stanley Ray Remsberg	Kans.
Anthony John Diamond	Del.	(With distinction)	
John Heughes Donoghue II	D.C.	John Nelson Rogers	Md.
Michael Joseph Duberstein	Md.	Kenneth Jay Rop	Mich.
Edward George Engelbart	N.J.	Stephen Victor Rubin	N.Y.
Zalkarnain Hasan	Indonesia	Seymour Norman Shuster	Pa.
Margaret Johanna Jess	Ga.	Linda Kay Stone	Colo.
Nancy Sue Johnson	Mo.	Susan Louise Swan	R.I.
Lawrence Henry Jones	N.Y.	Ann Wendell Thompson	Va.

BACHELOR OF BUSINESS ADMINISTRATION

FEBRUARY 21, 1963

*John Lipscomb Braddock	D.C.	*William Charles Hannemann	Md.
Stanley Joseph Bright	Va.	Leslie Allan Hubbard	Va.
Terry Stephen Church	Iowa	(With distinction)	
Peter Benjamin Coppola	Va.	*Bertel Robert Megill	D.C.
William Wesley Davis	Va.	Harvey Lee Montgomery	Va.
Dale Eugene Friess	Va.	Legare Obear	Va.
*Larry Dean Fuller	Oreg.	*Humphery Yat-Sang Shum	Hong Kong
*James Keith Graham	Va.	Walter William Teeter	Va.
Jean Elizabeth Grubbs	Va.	*Robert Frederick Warren	Va.

JUNE 5, 1963

Hamilton Scott Beggs	Va.	John Richard Franceschini	D.C.
John William Booth	Va.	Richard Mayer Freedman	N.J.
Lew Richard Breitman	Mass.	James Richard Grant III	Va.
Elizabeth Christine Broom	D.C.	Thomas Arthur Gutherman	N.Y.
Elizabeth Ann Chase	Maine	Suzanne Foulke Judge	Md.
Charles Hayward Coe	Va.	Robert Noah Keifert	Va.
James Daniel Gallather	Va.	Blanche Hyatt Keller	D.C.
Willard Arthur Culver	D.C.	Michael Shannon Kelley	Va.
John Marshall Dempcy	Ohio	Evelyn Smith Kerper	D.C.
Richard William Douglas	Va.	Judith Ellen Kliston	N.Y.
Lawrence Edelman	N.Y.	(With distinction)	
William George Ellis, Jr.	Va.	Ronald Wilson Langston	Va.
Richard Joel Ellman	N.Y.	Harriett Jacqueline Lemley	W. Va.
Joseph Falcione	Va.	Arthur Lowe III	D.C.
James Daly Farley	Va.	Dana Prescott Miller, Jr.	Va.
William Russell Farley, Jr.	Va.	Carol Ann Nyquist	Va.
Leon Raymond Firth	Va.	(With distinction)	

* Degree requirements completed summer 1962.

Harry Huston Olmstead, Jr.	Va.	Anthony John Schwartz, Jr.	Va
James Richard Paquette	Va.	Richard Presley Skinker	D C
Herbert Rehbock	Va.	Marshall Roosevelt Snead	Va
August Frank Reusow	Va.	Mark Irwin Sohmer	N.J.
Gerard Hayden Rodgers, Jr.	D C.	James Alexander Somervell	D.C.
William Bernard Rosenberg	N Y.	John Blaine Stalder	Va
Kermit Warren Ryman	Md.	David Benoni Smilduth	Va
Charles Melton Schwab, Jr.	Md.	Ernest Alvin Thomas, Jr.	D C

MASTER OF ARTS IN GOVERNMENT

FEBRUARY 21, 1963

Robert Alan B.S. 1931, U. S. Military Academy	N.Y.	**Diana Hines Heard** A.B. 1951, Duke University	D.C.
Robert Harold Betzer A.B. 1962, Montana State University	Mont.	**Conrad Curtis Holcomb, Jr.** A.B. 1960, University of North Carolina	N C
Robert Samuel Clark A.B. 1960, University of Maryland	Pa.	**Robert Edward Johnson, Jr.** A.B. 1951, Amherst College	Md.
***John Edward Crump** B.S. in Agr. 1950, Kansas State University of Agriculture and Applied Science	Kans.	**U. Sein Lin** A.B. 1946, University of Rangoon, Burma	D C
Anita Mallinckrodt Dasbach B.J. 1951, University of Missouri	Md.	**Joseph Logan** A.B. 1950, Carleton College B.S. 1951, University of Minnesota	Calif.
***Vongduen Devahastin** B. in Acct. 1955, Chulalongkon University	Thailand	**James Alan Milam** A.B. 1956, University of Miami	Md
***Harry Joseph Donahue** B.S. 1949, U. S. Naval Academy	Md.	**Herbert Lee Morris** B.S. in Comm. 1955, State University of Iowa	M
***Mary Fischer Dunnington** B.S. in Ed. 1952, University of Kansas	Va.	**Patricia Reher** A.B. 1961, University of Oregon	S D
Murl Dee Harman A.B. in B.A. 1956, State College of Washington	Wash.	**Clare Louise Schwartz** A.B. 1945, University of Miami	Va
John Burton Haseltine A.B. 1960, Drury College	Mo.	**Samuel Sorber Staley III** A.B. 1952, Principia College	Va

JUNE 5, 1963

Robert Bruce Anderson A.B. 1956, Colgate University	Va.	**Ashok Kapur** A.B. 1960, Punjab University	India
George Philip Arnold B.B.A. 1956, University of Wisconsin	D.C.	**Hernan Alfredo Laso** A.B. 1957, The George Washington University	Ecuador
Carolyn Ann Bernard A.B. 1959, Marymount College	N.Y.	**Charles William Macune, Jr.** A.B. 1961, Texas Christian University	Texas
Edward C. Blatchley B.S. 1952, Ithaca College	N.Y.	**Richard Brown McKees** A.B. 1960, University of New Mexico	Fla.
Vincent Anthony Bogucki B.S. 1946, U. S. Coast Guard Academy	Conn.	**Randall William Meyer, Jr.** A.B. 1960, Westminster College	Mo.
Richard Rolland Brown, Jr. A.B. 1955, Ohio Wesleyan University	D.C.	**Lola Pennyan Mobley** A.B. 1952, The George Washington University	Ky.
Merle Thomas Carlson B.S. in B.A. 1957, University of Nebraska	Va.	**Sharon McIver Rambo** B.B.A. 1948, Texas Technological College	Texas
Andrew Lloyd Case A.B. 1961, Roanoke College	Va	**Franklin Salzman** A.B. 1949, North Carolina State College of Agriculture and Engineering	Md.
Charles Ashby Coffindaffer B.S. 1959, Fairmont State College	Md.	**Edward Martin Wall** A.B. 1940, LL.B. 1949, Harvard University	Va.
William Albert Jones, Jr. B.B.A. 1960, Georgia State College of Business Administration	Va		

MASTER OF BUSINESS ADMINISTRATION

FEBRUARY 21, 1963

***John Thomas Ambrulevich** B.S. 1959, Quinnipiac College	Conn.	***John Wayne Caple** B.S. in B.A. 1951, University of Denver	Colo.
***Thomas Frederick Blake, Jr.** B.S. 1949, U. S. Naval Academy	Calif.	**Walter Aaron Carter, Jr.** B.S. 1945, U. S. Military Academy	N.Y.
***Alfred James Boyd, Jr.** A.B. 1961, University of Maryland	Fla.	***Charles Purcell Cecil** B.S. 1949, U. S. Naval Academy	N C
***Donald Francis Brazee** B.S. 1961, University of Maryland	Conn.	**Conrad Sydney Chovee** B.B.A. 1961, University of Miami	Md.
Carl Robert Brown, Jr. A.B. in Ed. 1950, University of Michigan	Fla.	***Robert Fitzhugh Crossland** B.B.A. 1948, Southern Methodist University	Texas

* Degree requirements completed summer 1962.

John Edward Daniels — Va.
A.B. 1954, University of Notre Dame

*Jack Bundy Fergerson — Va.
B.S. in Mil.Sc. 1954, University of Maryland

Francesco Paolo Ferraraccio — D.C.
B.S. 1949, Allegheny College

*Donald Scott Floyd — Va.
B.S. 1948, Massachusetts Institute of Technology

Frederick Galione — N.Y.
B.B.A. 1955, University of Notre Dame

*William Edward Harris — Va.
B.S. 1949, Utah State University of Agriculture and Applied Science

*Alan Price Hawkins — Texas
B.B.A. 1961, The George Washington University

*Melville Wheeler Hightshoe, Jr. — Ark.
B.S. 1961, University of Maryland

*Robert Henry Houser — Calif.
B.S. in Forestry 1940, University of Michigan

*Robert Pryde Johnson — Fla.
A.B. 1951, University of Texas

Daniel Sungil Juhn — Korea
A.B. in Govt. 1959, The George Washington University

Ernest Macon Keeling — Va.
B.S. 1956, Virginia Polytechnic Institute

Joseph Charles Kotsko — Pa.
A.B. 1951, Duquesne University

Richard Everett Kurtz — Md.
B.S. in Eng.Physics 1955, Lehigh University
J.D. 1960, The George Washington University

Sherman Lazrus — Md.
B.B.A. 1961, The George Washington University

*Lewis Charles Lemon — Calif.
B.S. 1951, Oklahoma State University of Agriculture and Applied Science

Marathon Wirija Mihardja — Indonesia
A.B. 1961, The George Washington University

*William Stanley Miller — Tenn.
A.B. 1950, Vanderbilt University

Donald Hartvig Nelson — D.C.
A.B. 1948, University of North Carolina

Mary Josita Reding — Minn.
A.B. 1946, College of St. Scholastica

*Rollo Claude Richards — Utah
B.S. 1950, Utah State University of Agriculture and Applied Science

*Harry Edward Sears — Md.
B.S. 1926, U. S. Naval Academy

Ronald Arthur Siegrist — Md.
B.S. in E.E. 1952, University of Maryland

Norbert Leroy Simon — Ohio
B.S. 1958, Ohio State University

Lowell Cyrus Smith — Va.
B.S. in B.A. 1953, Kent State University

Federico Guillermo Varela — Bolivia
A.B. in Govt. 1956, The George Washington University

James Edward Veccia — N.Y.
B.S. in E.E. 1958, University of Oklahoma

*John Franklin Whitehouse — Oreg.
B.S. 1949, Iowa State University of Science and Technology

*Tilton Lee Willcox — N.C.
B.S. 1949, U. S. Military Academy

JUNE 5, 1963

John Abbott — Kans.
B.S. 1957, Yale University

Robert Kennedy Adams — Fla.
B.S. 1950, U. S. Coast Guard Academy

Thomas Fauntleroy Ball, Jr. — D.C.
B.S. in Comm. 1950, University of Virginia

James Milton Baumgardner — Pa.
B.S. 1947, Villanova University

Gordon Karl Bohn — Md.
A.B. 1957, University of Pennsylvania

Wendal Lee Bushoom — Nebr.
B.S. in B.A. 1948, University of Nebraska

Anthony Francis Cacchillo — Conn.
B.S. in Phar. 1953, University of Connecticut
M.S. in Phar. 1954, University of Tennessee

Joe Mason Cashion — Tenn.
B.S. in B.A. 1961, University of Tennessee

Stuart Thompson Clark — Calif.
A.B. 1951, San Diego State College

Thomas Edward Clifford — D.C.
A.B. 1949, Howard University

James Milo Cox — Ind.
B.S. 1955, Indiana State Teachers College

Leon Stanislaus Darkowski — Pa.
A.B. 1939, Duquesne University
A.M. 1943, St. Vincent College

Robert Francis Dee — Md.
B.S. 1951, University of Maryland

Lawrence Del Rosario — Calif.
A.B. 1951, San Francisco State College

Robert Emmett Dickman — Colo.
B.S. in M.E. 1947, University of Colorado
B.C.E. 1953, Rensselaer Polytechnic Institute

Herbert Leon Emanuel — Mass.
A.B. 1952, University of Massachusetts

Frank Gordon Ephriam — D.C.
B.S. 1957, University of California

Erwin Kenneth Fellerman — Va.
B.S. 1959, Texas Lutheran College

Hugh Milton Ferguson — Va.
B.C.S. 1956, Seattle University

Roland James Fitzgerald — N.Y.
B.S. 1932, Syracuse University

Sidney Mell Ford — Ill.
B.S. 1961, University of Corpus Christi

Paul Lowe Foster — Maine
B.S. in B.A. 1951, Northwestern University

Charles Richard Graf — Md.
B.S. 1959, University of Maryland

Jack DaCosta Graham — Ohio
A.B. 1956, Western Reserve University
B.B.A. 1961, Fenn College

Joseph Raymond Guth — Mo.
A.B. 1949, University of Missouri

James Vincent Hartinger — Ohio
B.S. 1949, U. S. Military Academy

James Rufus Heatherington — Va.
A.B. 1954, College of William and Mary

Fitzhugh Lee Hendrix, Jr. — Fla.
B.S. in B.A. 1961, University of Florida

David Edmund Hicks — Ill.
B.Gen.Ed. 1960, University of Omaha

Steven Edward Hill — Pa.
B.S. 1946, U. S. Military Academy

Frank Peter Iacobell — Mich.
A.B. 1960, St. Bonaventure University

Clay Bradford Jackson — La.
B.S. 1953, U. S. Military Academy

Cherical Chacko Jacob — India
B. of Comm. 1949, University of Madras, India
A.M. 1955, Nagpur University, India

Hilton Pressley Jones, Jr. — Texas
A.B. 1950, University of Texas

Charles Jack Keidel — Fla.
A.B. 1948, Wittenberg University

James Francis Kennedy — Md.
A.B. 1943, La Salle College

* Degree requirements completed summer 1962.

Thomas Edgar Killebrew — Ohio
B.S. in B.A. 1950, Ohio State University
Wayne Paul Kirchoffer — Wis.
B.S. 1956, Marquette University
John Harry Lauck — Ind.
B.S. in Comm 1947, University of Notre Dame
Ronald Arthur Leahy — Md.
Ph.B. 1954, Loyola College
B.S. 1960, Johns Hopkins University
Charles Bascum Linton — Ala.
A.B. 1959, University of Alabama
Anthony Michael Lombardi, Jr. — N.Y.
B.S. 1960, Fairleigh Dickinson University
Paul Caffee Lovelace — D.C.
B.S. 1938, U. S. Naval Academy
Anthony Lukeman — Pa.
A.B. 1954, Dartmouth College
Ronald James Lynch — Mass.
A.B. 1951, College of the Holy Cross
George Roger Martin — Mass.
A.B. 1958, American International College
Russell Lawton McCall — Fla.
A.B. 1960, University of Florida
Rodney Bonner McDaniel — Calif.
A.B. 1956, Stamford University
Thomas Howard McManus — N.Y.
B.B.A. 1948, Canisius College
Bobby Rogers Meadows — Tenn.
B.S. in B.A. 1959, Tennessee Polytechnic Institute
Richard Lawrence Mehr — Ky.
A.B. 1952, University of Louisville
Frederick William Miche, Jr. — Fla.
B.S. 1943, U. S. Naval Academy
Naval Eng. 1949, Massachusetts Institute of Technology
Noble Alton Miller — Fla.
A.B. 1950, University of Oklahoma
Jack Winfred Moon — Calif.
A.B. 1959, Guilford College
Ralph Kenneth Neff — Ind.
B.S. in B.A. 1958, University of Nebraska
Robert Glenn Nicol — Calif.
B.S. 1949, University of California
Thomas Owen Nutt, Jr. — Iowa
B.S. 1947, Northwestern University
Donald Edward O'Connor — Va.
A.B. in Govt. 1959, The George Washington University
Robert Quentin Old — Calif.
A.B. 1950, George Pepperdine College
Robert Calvin Patterson — Miss.
B.S. 1960, Mississippi State University
LeRoy Spencer Paul — Va.
A.B. 1950, The George Washington University
Donald Magil Perkins — Utah
B.S. 1959, Brigham Young University
Richard Wyndon Perkins — Md.
A.B. 1953, Brown University
LL.B. 1956, Yale University
John Stephen Phillips — Conn.
B.S. 1951, U. S. Coast Guard Academy
Paul Patrick Pirhalla — Pa.
B.S. 1952, Villanova College
Joseph Aldo Pizzi — Venezuela
B.S. in B.A. 1953, Bryant College
Gerald Glen Rambo — Texas
B.S. 1948, Texas Technological College
Bruce Collins Rasche — Tenn.
A.B. 1955, University of Washington
John Joseph Peter Reddy — N.Y.
A.B. 1950, St. John's University
Sanford Lee Reeverman — Mich.
A.B. 1955, McKendree College.
Charles DeWayne Roberts, Jr. — Calif.
B.S. in B.A. 1951, University of Missouri
William Walter Roberts — Texas
A.B. 1962, University of Maryland
Keith Halvah Robertson — Maine
A.B. 1947, Dartmouth College
James Logan Roeder — Mo.
A.B. 1959, Valparaiso University
William Sanz — Mo.
B.B.A. 1955, University of Miami
Wendel Joseph Schmitt — N.J.
B.S. 1956, St. Peter's College
Irving Donald Snook, Jr. — Mass.
B.S. 1961, College of William and Mary
Joseph Spencer — Md.
B.S. in F.S. 1948, Georgetown University
David Carl Strom — Minn.
A.B. 1958, University of Minnesota
James Peter Swenson — Ohio
A.B. 1957, University of Kansas
Peleg B. Tamur — Israel
LL.B. 1959, University of Tel-Aviv, Israel
Robert Earl Thompson — Calif.
A.B. 1954, Lake Forest College
Robert John Toothman — W.Va.
A.B. 1948, West Virginia University
George Sam Tosatti — Conn.
B.S. 1958, University of Connecticut
Young Arnold Tucker — Fla.
B.S. 1947, U. S. Military Academy
Wilma Lois Tuttle — Oreg.
A.B. 1944, The George Washington University
Norbert Francis Vasil — Md
B.S. 1959, Johns Hopkins University
Leslie Merrill Walrath — Nev.
B.Gen.Ed. 1960, Municipal University of Omaha
Miles Standish Washington, Jr. — Pa.
A.B. 1947, Lincoln University
John Robert Webb — Ind.
A.B. 1947, DePauw University
Joseph John Went — Conn.
A.B. 1953, University of Connecticut
Gerald Dean Williams — Md.
A.B. 1949, Union College
Jack Leonard Wilson — Okla.
B.S. 1952, U. S. Naval Academy
LeRoy McCall Wilsted — Calif.
B.S. 1948, University of Utah
Willard Eugene Wisler — Fla.
B.S. in B.A. 1955, University of Florida
Frank Newell Worden — Ohio
B.B.A. 1946, University of Michigan
Robert Louis Zambenini — Ind.
B.S. 1960, Florida Southern College

THE COLLEGE OF GENERAL STUDIES

ASSOCIATE IN ARTS

FEBRUARY 21, 1963

George House Behrens — D.C.
Henry Carl DeGrotte, Jr. — Md.
Betty Ann Fridinger — Va.
Stephen Paddock Ham — Va.
Robert Edward Harris — Va.
James Robert Lassiter — Va.

John Roger Lund (With distinction)	Minn.	*Merlin Van Statzer (With distinction)	Texas
*Elizabeth Ann Mullen	Va.	*Roderick Ormsby Symmes	N.Y.
Relda E. Pananos	D.C.	Lloyd L. Vandenberg	Texas
Donald William Poorman	Ill.	George Keith Weldin	Texas
*Harry Underwood Potter	N.J.	*Margot Marta Zuelzer (With distinction)	D.C.
*Ronald Lee Rich	Calif.		

JUNE 5, 1963

Donald Edward Boldt	Iowa	Jens Kiilsgaard	Wis.
Harold Llewellan Clark	Va.	Edward Martin Kopta	N.J.
Margaret Elizabeth Hayward Eber	Va.	Wrightson Lewis	N.J.
Eugene Taylor Edwards	Ill.	Ethel Margaret McKemy	Va.
Margaret Marie Glorius	Ohio	Milton J. Morgan	Pa.
Zenon Grundowski (With distinction)	Mich.	Frank Robert Parr (With distinction)	Md.
Elena Jonah Harrison	N.C.	Margaret Love St. John	Va.
George John Hartlmueller	Va.	John Louis Stoler	Va.
June Murphy Johnson	Nev.	Roy William Tandy, Jr.	Mich.

BACHELOR OF ARTS

FEBRUARY 21, 1963

*Thomas Albert Aldrich	Texas	Wayne LaVerne Lough	Calif.
Paul Edward Anderson	Va.	Clark Preston Manning	Texas
Robert Lawrence Anderson	Calif.	William Ellis Marlin	Mo.
*Raymond Lynn Ashcraft	Texas	Frederick Andrew Messing	Va.
Seymour Beckler	Pa.	Lawrence Lee Miller	Va.
Vernon Cooke Bono	Md.	Herman Louis Mixon	Fla.
Margaret Durant Bowden (With distinction)	Texas	William David Munsey	Ariz.
William Hendric Byrd, Jr.	Texas	Yoshito Yosh Murakami	Idaho
John Charles Carson, Sr.	Va.	James Ivan Myers (With distinction)	Ill.
Milton Collier	S.C.	Frederick Francis Nowak	Md.
William Joseph Dailey	Ala.	Russell Herman Oleson	Minn.
Robert Norman Flath	Pa.	*John Lawrence O'Neill	Tenn.
William James Foley, Jr.	N.D.	*Norman Stanley Orwat	Pa.
George Terry Fox	Va.	Shirley Ann Parmelee	Va.
*William Daniel Gilbert	Texas	Clifford John Peabody	N.J.
*Gustave Edward Gomory	La.	William Jerome Quinn	Md.
John Stephen Grischy	D.C.	*Robert Clinton Russell	N.Y.
John Franklin Hawkins	Ohio	John Marmertus Sands, Jr.	Mass.
*Edwin William Hayes	N.Y.	Ned Wallace Schoonover	Mo.
Paul Howard Hill	Md.	James Leo Skelley	N.J.
James Kenneth Jobe	Ill.	*Robert Erwin Snider	La.
*Charles Raymond Johnson	Tenn.	*Benjamin Fred Starr, Jr.	Ga.
William Arthur Kuerman	Fla.	*William Theodore Vierregger	Nebr.
Ernest Peter Krajnski (With distinction)	Va.	Elzberry Waters, Jr.	Va.
*Robert Henry LaCoy	Pa.	*James Wymore Welch	Nebr.
Charles John Larkin		*Dicky Wieland	Mich.
*Robert Edwin Larson	Mich.	*John Francis Wilhelmy, Jr.	Ohio
	Okla.	Elmer Frank Williamson	Texas
	Va.	Grant Clifton Young	Ill.

JUNE 5, 1963

Terence Michael Allen (With distinction)	Mo.	Joseph John Holicky, Jr.	Wis.
William Henry Anderson, Jr.		Herbert Norman Houck	Va.
Wallace Bruce Bagwell	R.I.	Jack Marvin Jackson	Texas
George William Baldauf	Fla.	Leland Earl Jarrett	Ind.
Boaden Bean	Calif.	George Wesley Kaseman	N.Y.
Charles Merwin Bueler	Pa.	Kenneth Howard Kastl	Mo.
Vernon Leroy Chandler	R.I.	Gene Robert La Rocque	Ill.
Muriel Olive Chase	Wash.	Robert Charles Ledbetter	Ga.
Guy Donald Chichester	R.I.	Joseph Patrick Loughran	N.Y.
Donald Webb Connelly	D.C.	Joan Cameron Mackie	Wash.
Allan Burns Cowart	Ga.	Donald Eugene Packard	Fla.
Perry Bruce Crouch	Ala.	Douglas Charles Pearson	Fla.
John Albert Duncan	Texas	Gerd Albert Remus	Idaho
Charles Clifford Green	D.C.	Joseph Archer Riley	N.D.
Arthur Maxwell Hale (With distinction)	Fla.	John Robert Roland	Pa.
Ella Parran Hance	Va.	John Herbert Schroeder	Calif.
		William Joseph Steele	Va.
	Md.	Joseph John Strnad	Nebr.

* Degree requirements completed summer 1962.

Philip Svetz — Pa.
Thomas Richard Thomas — Va.
Roy Michael Wade — Va.
John Vernon Waller — Md.
(Special honors in Business Administration)

William David Wessinger — N.Y.
Frank Eugene Wilson — Ariz.
Edward Anthony Wojcoski — Conn.
Willard Henry Woodruff — Va.
Elbert Dewey Young, Jr. — Pa.

BACHELOR OF BUSINESS ADMINISTRATION

FEBRUARY 21, 1963

Lawrence Frederick Danz — Wis.
John Temple Dunn — Va.

Victor Emile Werner — Md.

JUNE 5, 1963

Charles W. Macks — Pa.
Raymond Edward Roeder, Jr. — Pa.

William Willis Storm III — Texas
Antonio Vega — Fla

BACHELOR OF SCIENCE IN CARTOGRAPHY

FEBRUARY 21, 1963

*Frederick Wells Bellinger — Va.

*Michael Kerwin Linck, Jr. — D.C.

JUNE 5, 1963

Robert Raymond Gleason — Conn.

MASTER OF ARTS

FEBRUARY 21, 1963

Roy William Amick — Texas
B.B.A. 1956, University of Pittsburgh

Marcus Aurelius Arnheiter — Maine
B.S. 1952, U. S. Naval Academy

Alice Rose Bakutis — Va.
B.S. in Nursing 1955, Washington University
M.S. 1962, University of Colorado

Stephen Anthony Barbier — Calif.
B.B.A. 1951, Iona College

William Francis Beatty — N.J.
A.B. 1960, The George Washington University

*Walter William Benner, Jr. — Ill.
A.B. 1957, University of Illinois

Raymond Chapman Bishop — Fla.
B.S. 1937, Mississippi Southern College

Vincente Thomas Blaz — Guam
B.S. 1951, University of Notre Dame

Floyd Harry Blizard — Calif.
B.S. 1948, U. S. Naval Academy

*James Knox Boak — Maine
B.S. 1944, U. S. Naval Academy

Charles Howard Brooks, Jr. — La.
B.S. 1958, U. S. Naval Academy

William Anthony Bryant — Md.
B.S. in Mil.Sc. 1955, University of Maryland

Oliver Felmly Buck — N.J.
B.S. in Mil.Sc. 1958, University of Maryland

*William Entwistle Burton — W.Va.
B.S. in Mil.Sc. 1957, University of Maryland

Freeman Anderson Bussey — Md.
A.B. 1938, Morehouse College

Dougal Alexander Cameron — Texas
B.S. 1955, University of Texas

Robert Kingsley Carpenter — Md.
A.B. 1950, American University

Anthony Henry Catanach — N.M.
B.S. 1952, U. S. Naval Academy

*Armen Chertavian — Mass.
B.S. 1951, U. S. Naval Academy

*John Cheston — Md.
A.B. 1956, Yale University

George Anthony Curach — Calif.
B.S. in M.E. 1960, San Jose State College

Donald Williams Cuthrell, Jr. — Va.
A.B. 1958, Virginia Military Institute

Robert Norman Cyzmoure — Wis.
B.S.C. 1953, Spring Hill College

*John Augustine Delaney — Mass.
A.B. 1944, Boston College

Donald Alfred Dertien — Mich.
A.B. 1958, The George Washington University

Robert Felix Dussault — N.H.
A.B. 1951, University of New Hampshire

Maureen Mae Dyrud — Md.
B.B.A. 1959, B.S. in Ed. 1961, University of Minnesota

George William Ema — Va.
Ph.B. 1940, University of Wisconsin

*Robert Louis Engemann — Wash.
B.S. in Mil.Sc. 1956, University of Maryland

Thomas William Fishburn — Va.
B.S. 1940, University of Oregon

*Lorick Franklin Fox, Sr. — Md.
B.S. 1950, American University

William Russell Furrey — Tenn.
A.B. 1961, The George Washington University

Alton Cason Gallup — Md.
B.S. 1946, U. S. Naval Academy

Edward Webb Geer, Jr. — Va.
B.S. 1958, University of Maryland

*Robert Franklin Gower — Okla.
B.S. 1946, U. S. Naval Academy

* Degree requirements completed summer 1962.

Frank Reginald Green — Va.
A.B. 1952, Sacramento State College
*Paul Bentley Haigwood — N.C.
B.S. in Comm. 1947, University of North Carolina
Robert Conrad Hammond, Jr. — Miss.
B.S. 1941, Mississippi State University
*Arthur Laverne Harkins — Va.
B.S. in Ed. 1949, Ohio State University
Ronald Dale Hartell — Mo.
B.J. 1951, University of Missouri
*Robert Stiles Harward — Md.
B.S. 1957, U. S. Merchant Marine Academy
*Chester Eugene Herrick — Wis.
B.S. Pub.Adm. 1954, American University
*Robert Thomas Hewitt — Va.
A.B. 1948, College of William and Mary
Alexander George Hoshovsky — Va.
A.B. 1952, St. Mary's University of San Antonio
Carl Thomas Johnson — N.Y.
B.S. 1960, Cornell University
Clarence Arthur Edward Johnson, Jr. — W.Va.
B.S. 1953, U. S. Naval Academy
Julia Harris Jones — Ala.
B.S. 1934, Alabama College
William Theodore Kidd — N.Y.
A.B. 1954, College of St. Joseph on the Rio Grande
*Lewis Kolar — Va.
B.S. 1947, Pennsylvania State College, Shippensburg
*George Christopher Kougias — Mass.
B.S. in Mil.Sc. 1960, University of Maryland
Leslie Beller Kovacs — Va.
B.B.A. 1957, St. Mary's University of San Antonio
*Clifford Vincent Kovarik — Md.
A.B. 1962, The George Washington University
Hubard Dan Kuokka — Wash.
A.B. 1959, University of Oregon
Charles John Larkin — Okla.
Arthur Lewis LaRoche, Jr. — N.Y.
A.B. 1942, Union College
B.S. 1955, Rensselaer Polytechnic Institute
Charles Frederick Liebrecht — Calif.
A.B. 1961, The George Washington University
*Quenten Sheridan Looney — Ala.
A.B. 1961, The George Washington University
Lance Marston — Md.
A.B. 1957, University of New Hampshire
*Robert Alexander Mays — Pa.
B.S. in M.E. 1960, University of Pittsburgh
Charles Thomas McCaffrey, Jr. — N.Y.
A.B. 1952, St. Lawrence University
Robert Earl McClure — Calif.
A.B. 1940, University of California
*Francis Anthony McDonough — Mass.
B.S. in B.A. 1955, Boston University
*Michael Alan Meredith — Md.
B.E.S. 1960, Johns Hopkins University
Daniel Joseph Mooney, Jr. — R.I.
Ed.B. 1940, Rhode Island College
William Franklin Moore — Calif.
B.S. in Nav.Sc. 1961, U. S. Naval Postgraduate School
Donald Dixon Nash — Calif.
B.S. in Aeronautical Operations 1960, San Jose State College
*Walter Stephen Osipoff — Ohio
A.B. 1938, Ohio State University
*Louis John Osterhous — Va.
A.B. 1937, Michigan State University of Agriculture and Applied Science
Beverly Lawrence Overman — Va.
A.B. 1956, College of William and Mary
John Henry Parry, Jr. — N.Y.
B.S. in Mgt.Eng. 1960, Rensselaer Polytechnic Institute
Ivan S. Perkins III — Okla.
B.S. 1960, Oklahoma State University of Agriculture and Applied Science
Raymond Albert Proietti — N.J.
A.B. 1953, Norwich University
James Dewey Ramsey — Ark.
A.B. 1940, Arkansas State College
William Francis Reeve — Conn.
B.S. in E.E. 1957, University of Notre Dame
William Rosen — Calif.
A.B. 1958, The George Washington University
Alan Herbert Rosenstein — Md.
B.S. in Met.Eng. 1959, Drexel Institute of Technology
Herman Paul Simon — Va.
B.M.E. 1947, New York University
Gerald Ottum Skaar — Wis.
A.B. 1957, Luther College
*Wilford Eugene Snyder — Md.
B.S. in Comm. 1929, State University of Iowa
Richard Joseph Springe — Va.
B.S. 1948, U. S. Naval Academy
Edward Frost Stacy — Ohio
B.S. 1948, U. S. Naval Academy
George Stakias — Va.
B.B.A. 1960, College of William and Mary
*Julius Thomas Stanges — Va.
B.S. 1941, Catholic University of America
Benjamin Fred Starr, Jr. — Ga.
Elmer Torgesen — Fla.
B.S. in B.A. 1948, New York University
*Henry Sanderson Wann — Pa.
A.B. 1937, Harvard University
*Trentwell Mason White, Jr. — Mass.
A.B. 1954, A.M. in Ed. 1955, Tufts University
Edwin Earl Williams — R.I.
B.S. 1949, U. S. Naval Academy
Ronald Robert Zuilkoski — Pa.
A.B. 1954, Pennsylvania State University

JUNE 5, 1963

Douglas Gordon Aitken — Calif.
A.B. 1944, San Jose State College
Leslie Davis Austin, Jr. — Va.
A.B. 1947, University of North Carolina
B. Lewis Avera, Jr. — Ga.
B.S. 1955, The Citadel
Fred Richard Bahr — Va.
A.B. 1962, The George Washington University
Robert Woodrow Baker — Ohio
A.B. 1941, Hiram College
Lewin Daniel Baughman — Texas
B.S.C. 1941, State University of Iowa
George Emery Biles — Fla.
B.S. 1956, U. S. Naval Academy
Howard Gordon Blank, Sr. — Md.
B.S. in Ed. 1944, Muhlenberg College
Leonard Alexander Boreski — N.J.
B.S. in B.A. 1960, Drexel Institute of Technology
Raymond Joseph Borntraeger — Va.
Ph.B. 1948, Xavier University
Andrew Whitley Bright — Md.
A.B. 1935, Stanford University
Briscoe Baldwin Brown, Jr. — Va.
B.S. 1950, Virginia Polytechnic Institute
Howard Weston Burnett — Fla.
B.S. 1942, U. S. Naval Academy

* Degree requirements completed summer 1962.

Robert James Cameron — S.D.
B.S. in Mil.Sc. 1955, University of Maryland
William Robert Collins — Va.
B.S. in F.S. 1935, Georgetown University
Willard Arthur Comer — N.J.
B.S. in B.A. 1939, Rutgers University
Joseph Strother Crane — D.C.
A.B. 1955, Johns Hopkins University
Perry Bruce Crouch — Texas
George Carpenter Dewey — Md.
B.Gen.Ed. 1961, Municipal University of Omaha
Warren Robert DeYoung — Calif.
B.S. in B.A. 1943, University of Kansas
Margaret Pickering Douglass — Va.
A.B. 1942, Incarnate Word College
Vern B. Dowell, Jr. — Okla.
B.S. 1956, Butler College
Oscar Lee Faulkner, Jr. — W.Va.
B.Gen.Ed. 1960, Municipal University of Omaha
Joseph Feith — Ark.
A.B. 1961, The George Washington University
John Joseph Flanagan — N.J.
B.S. 1954, Seton Hall University
Charles Randolph Flather — R.I.
A.B. 1956, Brown University
John Rick Ganey — Va.
B.S. 1955, U. S. Naval Academy
Donald Byron Gordon — Fla.
B.S. in A.E. 1938, Cornell University
Earle Haney, Jr. — Va.
A.B. 1955, The George Washington University
Fred Franklin Harbin — N.C.
B.S. 1940, Davidson College
John Wesley Hughes — Calif.
A.B. 1940, San Jose State College
Moon Bong Kang — Korea
Graduation 1945, Japan Military Academy
Robert Prescott Keller — Fla.
B.S. in Mil.Sc. 1955, University of Maryland
Louie Brodsgaard Knudsen — Nebr.
B.S. 1944, U. S. Naval Academy
Jerry Kohout — Ill.
A.B. 1962, The George Washington University
Stephen Robert Krause — Va.
B.S. 1949, U. S. Naval Academy
Paul Conrad Krusekopf — Va.
B.S. in B.A. 1951, University of Missouri
James Claxton Lieber — N.D.
B.S. 1943, U. S. Naval Academy
B.S. in Aero.Eng. 1951, U. S. Naval Postgraduate School
M.S. in Aero.Eng. 1952, University of Minnesota
Joseph David Linehan — Conn.
B.S. 1939, U. S. Naval Academy
Thomas Alvin Loomis — Va.
B.S. in Forestry 1947, University of Michigan
Chester Stover Matthews — Pa.
B.S. 1947, University of Pennsylvania
Henry Allan McCartney — Fla.
A.B. 1941, Houghton College
William Edward McConville — N.Y.
A.B. 1958, Michigan State University of Agriculture and Applied Science
Walter Stark McCracken — Pa.
B.S. in Mil.Sc. 1957, University of Maryland
Martin Stobo McKell — Va.
A.B. 1959, University of California
Thomas Andrew Melusky — Wash.
B.S. 1941, University of Washington
William Joseph Merlo — Va.
B.S. in Mil.Sc. 1953, University of Maryland
Robert Hamilton Mitchell — Nebr.
B.S. in Mil.Sc. 1961, University of Maryland
Grant Hugh Olson — Pa.
B.S. in Art.Ed. 1958, Edinboro State College
Mark Gair Pell — Pa.
B.S. 1936, University of Pennsylvania
John Edwards Reed — Ark.
A.B. 1949, University of Arkansas
B.D. 1958, Duke University
John Robert Reed — Ind.
A.B. 1960, The George Washington University
Gerald Grey Roberts — Ky.
B.S. 1949, U. S. Naval Academy
Richard Douglas Robertson — Calif.
A.B. 1960, San Jose State College
Rufus Edwards Rose, Jr. — Fla.
B.S. 1954, U. S. Naval Academy
John Robert Rowland — Pa.
Norman Rulon Schlicher — N.J.
B.S. in Mil.Sc. 1956, University of Maryland
Arthur Oswald Schmagel — Calif.
B.B.A. 1959, University of Miami
Richard Edward Smith — Ill.
B.S. in Mil.Sc. 1950, University of Maryland
Warren Francis Stewart — La.
A.B. 1950, University of Texas
Harold Roy Tall — Calif.
B.S. 1957, U. S. Merchant Marine Academy
James Dowling Tanner — Va.
A.B. in Govt. 1957, The George Washington University
Benedict Alex Tarnell — Va.
B.S. in Mil.Sc. 1960, University of Maryland
David Herman Wagner — Va.
A.B. 1953, Bucknell University
Luke A. Westenberger — Va.
A.B. 1936, Gettysburg College
Joseph Bernard Wortman — Nebr.
B.S. in Comm. 1949, Creighton University
Hal Gill Wynne — Ark.
B.S. 1941, U. S. Naval Academy
Roger Lawrence Young — Kans.
A.B. 1958, The George Washington University

MASTER OF ARTS IN INTERNATIONAL AFFAIRS

FEBRUARY 21, 1963

*George Marvin Adams — Ill.
B.S. 1958, Indiana University
Carmelo Vincent Alba — N.Y.
B.S. 1940, University of Wisconsin
A.M. 1947, Columbia University
Ledwick Houston Alford — Ga.
B.S. 1938, U. S. Naval Academy
*Oscar Shannon Anderson, Jr. — N.C.
B.S. in Mil.Sc. 1954, University of Maryland
*Lyman Lester Andrews, Jr. — Mass.
B.S. in M.E. 1943, Northeastern University
B.S. in E.E. 1949, Massachusetts Institute of Technology
*Stanley Archenhold — Md.
A.B. 1961, The George Washington University
*Roswell William Ard — Ohio
B.S. in B.A. 1949, Ohio State University

* Degree requirements completed summer 1962.

*John Paul Arntz — S.D.
B.S. in Agr. 1941, South Dakota State College of Agriculture and Mechanic Arts

*Rodney Jenkins Badger — Va.
B.S. 1935, U. S. Naval Academy

*Alfred John Ball, Jr. — N.J.
A.B. 1938, Syracuse University

*Oakley Walter Baron — Ill.
B.S. 1941, University of Illinois

Joseph Aloysius Barrett, Jr. — Fla.
A.B. 1940, College of the Holy Cross

Richard Wheeler Belt, Jr. — N.H.
B.S. 1942, U. S. Naval Academy

*William George Beno — Miss.
A.B. 1958, University of the Philippines

Jack Augustus Blacker — Calif.
A.B. 1958, San Francisco State College

*Thomas O'Conner Blakeney — La.
B.S. 1954, Louisiana State University and Agricultural and Mechanical College

*Roman Theodore Blatz — Minn.
Graduate 1943, St. Paul Seminary

Heath Bottomly — Mont.
A.B. 1941, Montana State University
B.S. 1944, U. S. Military Academy

John Klotz Brier — D.C.
B.S. 1943, U. S. Military Academy

Burton Robert Brown — Pa.
B.S. in Eng. 1938, U. S. Military Academy

*Kenneth Pierpont Brundage — W.Va.
B.S. 1941, University of Connecticut
M.S. 1950, University of Vermont

*Wallace Richard Buelow — Pa.
B.C.E. 1961, Municipal University of Omaha

*Frank Ralph Burget — Okla.
A.B. 1954, Centenary College

*George Gordon Cantlay — Hawaii
B.S. 1943, U. S. Military Academy

*Daniel Thornton Chapman — Calif.
A.B. 1940, University of California at Los Angeles

*Paul Cumar — Md.
B.S. 1943, University of Maryland

*Donald Noble Clay — Conn.
B.S. 1935, U. S. Naval Academy

*Harold Douglass Collins — Colo.
A.B. 1941, Colorado University
LL.B. 1950, Georgetown University

*Edward Hanson Connor III — Wash.
B.S. 1943, U. S. Military Academy

John Edward Connor, Jr. — Del.
A.B. 1939, University of Delaware

John Powers Connor — Va.
B.S. 1937, U. S. Military Academy

*Victor Cornelius Conway — Mont.
A.B. 1949, University of California at Los Angeles

Damon Warren Cooper — Fla.
B.S. 1941, U. S. Naval Academy

*Thomas Hamlet Cooper — Ill.
B.S. in Agr. 1940, University of Illinois

Paul Franklin Cottingham — Fla.
B.S. in Mil.Sc. 1960, University of Maryland

*William Ellis Cox — Calif.
B.S. 1939, University of California at Los Angeles

*Kenneth Charles Crawford — Ill.
A.B. 1946, Illinois College
LL.B. 1951, University of Virginia

*James Joseph Cronin — N.Y.
A.B. 1950, The George Washington University

*Henry Otis Cutler — Fla.
B.S. 1943, U. S. Naval Academy
B.S. in A.E. 1950, U. S. Postgraduate School
M.S. in A.E. 1951, Massachusetts Institute of Technology

*John Milton Cutler — Fla.
B.S. 1943, U. S. Military Academy

*Ross Isaac Donnelly II — Ohio
B.S. in Ed. 1961, St. Mary College, Kansas

*Frank Duda — Pa.
B.S. 1940, Xavier University

*William Evans-Smith — N.J.
B.S. in Ed. 1942, Rutgers University

*Gene Earnest Fisher — Ind.
B.S. 1952, University of Maryland

Eugene Edward Fleaner — Okla.
B.S. in Agr. 1948, B.S. in B.A. 1949, Oklahoma State University of Agriculture and Applied Science

Charles William Fletcher — Mich.
B.S. 1941, U. S. Military Academy

*Raymond Andy Fulton — Fla.
B.S. in Agr. 1939, University of Arkansas

*William Carroll Garland — Ga.
B.S. 1942, U. S. Military Academy

*John George Georgelas — Utah
B.S. in Mil.Sc. 1960, University of Utah

*Henry William Gibson — N.Y.
B.S. in Mil.Sc. 1959, University of Maryland

*Vernon Gustavus Gilbert — Idaho
B.S. 1939, U. S. Military Academy

*Clayton Norvin Gompf — Texas
A.B. 1938, Western Maryland College

Quentin James Goss — N.D.
B.S. 1943, U. S. Military Academy
B. of A.E. 1950, M.S. 1951, Georgia Institute of Technology

Halford Robert Greenlee, Jr. — Va.
B.S. 1935, U. S. Military Academy

Robert Joseph Griswold — Puerto Rico
A.B. 1943, University of San Francisco
LL.B. 1949, University of Louisville

*Walter Andrew Guntharp — Fla.
A.B. 1949, University of Florida

*Malcolm Conner Hamby — Ill.
B.S. in Ed. 1947, Southern Illinois University
M.B.A. 1958, Indiana University

*Herman Leon Harris — Ala.
B.S. 1936, Alabama Polytechnic Institute

*Harry Lowell Hawkins — N.C.
B.S. 1939, University of North Carolina

*Fred Elmer Haynes, Jr. — Texas
B.S. 1941, Southern Methodist University

*Sherwood Watkins Heuer — Hawaii
A.B. 1941, Pomona College

Daniel Eli Henderson — Va.
A.B. 1956, Trinity University
LL.B. 1959, University of Texas
LL.M. 1962, The George Washington University

*Frank David Henderson, Jr. — Ohio
B.S. 1944, U. S. Military Academy

*Andrew Jackson Hendrick — Texas
B.S. 1941, Agricultural and Mechanical College of Texas
M.B.A. 1961, The George Washington University

James Thomas Hennessey — Ky.
B.S. 1940, Eastern Kentucky State College

*Paul Shirley Hicks — N.Y.
B.S. in E.E. 1936, Alabama Polytechnic Institute

*Charles Evans Higdon — Tenn.
B.S. in B.A. 1939, LL.B. 1940, University of Tennessee

Gregory Leo Higgins — Pa.
B.S. 1960, University of Maryland

*Carl Milton Hillstrom — Ala.
B.Gen.Ed. 1957, Municipal University of Omaha

*Samuel Mason Hogan — Texas
B.S. 1938, U. S. Military Academy
LL.B. 1950, Columbia University

*Chaz Max Holland — S.C.
B.B.A. 1950, University of Georgia
M.B.A. 1954, University of Michigan

* Degree requirements completed summer 1962.

*David Linton Hopkins — Mo.
A.B. 1951, University of California at Los Angeles — Minn.
*Herman Peter Hoplin
B.S. 1942, Minnesota State Teachers College, St. Cloud
M.B.A. 1955, Syracuse University — Pa.
*Joseph D. Hornsby
B.Gen.Ed. 1955, Municipal University of Omaha — Wash.
Lukas Ernest Hoska, Jr.
B.S. 1937, U. S. Military Academy
M.S. in P.A. 1949, Syracuse University
A.M. 1951, University of Maryland — Calif.
*Kenneth John Houghton
B.S. 1942, University of San Francisco — Ill.
*William Johnston Humma
B.S. 1944, U. S. Military Academy — Mich.
*Arthur Hurow
B.S. in Mil.Sc. 1960, University of Maryland — Calif.
Fred Wilson Jacks, Jr.
A.B. 1961, University of Wichita — Maine
*Samuel T. Jacks
A.B. 1959, Colorado College
A.M. 1961, The George Washington University — Texas
*Frank Edward Johnson
A.B. 1940, Pasadena College — Wash.
*Alan Walter Jones, Jr.
B.S. 1943, U. S. Military Academy — Fla.
Bruce Barton Jones
B.S. 1962, University of Maryland — Pa.
*Percy Lewis Jones
A.B. 1951, Sacramento State College
M.B.A. 1957, The George Washington University — Ill.
*Edward Albert Jurkens
A.B. 1940, Knox College — Ill.
*Frederick Joseph Karch
B.S. 1940, U. S. Naval Academy — D.C.
*Eldeen Henry Kauffman
B.S. in Mil.Sc. 1957, University of Maryland — Fla.
*Clarence Charles Kennedy
A.B. 1942, New York University — Tenn.
Ed Reuben King
B.S. 1936, U. S. Naval Academy — Wis.
*Philip George Krueger
B.S. 1942, U. S. Military Academy
M.S. 1950, Cornell University — N.Y.
Arnold LeBell
LL.B. 1931, New York Law School — Texas
*Eugene Alexander Lohman, Jr.
A.B. 1958, American International College — Va.
Andrew Stevenson Low, Jr.
B.S. 1942, U. S. Military Academy — Conn.
*Marvin Lubner
B.S. in Aero.Eng. 1940, Parks College of Aeronautical Technology — D.C.
*Barton James Mallory
B.S. 1943, U. S. Military Academy
A.M. 1957, The George Washington University — Va.
James Harrison Mangan
B.S. 1952, University of Maryland — Texas
Alfred Martin
B.S. 1939, University of California at Los Angeles — Texas
John Albert Martin
B.S. in E.E. 1929, Agricultural and Mechanical College of Texas
A.B. 1938, St. Mary's University of San Antonio — Kans.
Dale Mayberry
B.S. 1933, U. S. Naval Academy
A.M. 1950, Stanford University — Tenn.
*Paul Jones McClure, Jr.
B.S. 1950, University of Houston — La.
*Hal Dale McCown
A.B. 1940, Louisiana State University and Agricultural and Mechanical College — Pa.
*Daniel Wade McElwee
B.S. 1943, St. Joseph's College — Iowa
*James Niel McFadden
A.B. 1941, Coe College — N.Y.
Edward Wilson McGregor
A.B. 1940, City College, New York — Ala.
*Vernon Merritt, Jr.
B.S. 1937, Alabama Polytechnic Institute — Wash.
*Lee Edward Metcalfe
A.B. 1940, Central Washington College of Education — N.Y.
*Leon Adrian Michaelis
A.B. 1936, City College, New York — Va.
*Crosby Park Miller
B.S. in C.E. 1940, Virginia Military Institute — Pa.
*Edward George Miller
B.S. 1941, U. S. Naval Academy — Okla.
*Judson Frederick Miller
B.S. 1961, University of Maryland — Ill.
Edward D. Mohlere
B.S. 1936, U. S. Military Academy
M.S. 1940, Massachusetts Institute of Technology — Mo.
*Robert Earl Morris
B.S. in Aero.Eng. 1951, M.S. in E.E. 1952, U. S. Navy Postgraduate School — W.Va.
*William Benjamin Morton
B.S. 1940, U. S. Naval Academy — N.C.
*John Frederick Nash, Jr.
B.S. 1942, North Carolina State College of Agriculture and Engineering — N.C.
*Clifton Leonidas Nicholson
B.E.E. 1951, North Carolina State College of Agriculture and Engineering — Wash.
Henry Shore Noon
A.B. 1945, University of Washington — Texas
*George Carl Northcutt
B.S. 1940, Oklahoma State University of Agriculture and Applied Science — N.Y.
*Denis Patrick O'Connor
A.B. in Govt. 1950, The George Washington University — Calif.
*George Gray O'Connor
B.S. 1938, U. S. Military Academy — Texas
*John Curran O'Donnell
A.B. 1948, Antioch College — Texas
Paul Francis Oswald
B.S. 1936, U. S. Military Academy — Va.
*Frank Robbins Pancake
A.B. 1938, Virginia Military Institute — Ala.
William Woody Parramore, Jr.
B.S. 1953, Centenary College — Nebr.
*William Oliver Peak III
B.S. 1943, U. S. Military Academy — Pa.
Willard Pearson
M.S. 1953, Columbia University — Mont.
Carl August Peterson
B.S. in Agr. 1937, Montana State College — Oreg.
*Ellis Earl Pickering
B.S. 1940, Oregon State University — Fla.
Carleton Preer, Jr.
B.S. 1939, Auburn University — Fla.
*Walter Winfield Price, Jr.
B.S. 1941, U. S. Naval Academy — Calif.
*Fred Beaver Proctor
B.S. 1943, U. S. Military Academy
M.E. 1948, University of California — Okla.
*Walter Bennett Putnam
B.S. 1959, University of Maryland — Mass.
*Edmund Anthony Rafalko
B.S. 1945, U. S. Military Academy — Mass.
*Augustin Joseph Rapisarda
A.B. 1958, American International College — Va.
Robert Clifton Rawl
B.S. 1940, College of William and Mary — D.C.
Ralph Amos Reeve
B.S. 1938, South Dakota State College of Agriculture and Mechanic Arts — Texas
Robert Polk Riordan
A.B. 1938, Rice University

* Degree requirements completed summer 1962.

John Clarke Roberts, Jr. — Texas
A.B. 1939, LL.B. 1946, University of Texas

*Glenn Elza Rogers — Ill.
Ed.B. 1941, Southern Illinois University

*Harris Gordon Rogers, Jr. — Ga.
B.S. 1945, U. S. Naval Academy
M.B.A. 1961, The George Washington University

*Jack Alan Rogers — Texas
A.B. 1941, University of California

*Melvin Herbert Rosen — Conn.
B.S. 1940, U. S. Military Academy

*Eric Armand Rundquist — Utah
B.S. 1936, Utah State University of Agriculture and Applied Science

*John David Sapp — Fla.
B.S. in B.A. 1941, University of Florida

*Samuel O. Sartor — Texas
A.B. 1961, San Francisco State College

*Wesley Henry Schmidt — Ill.
B.S. 1945, U. S. Naval Academy

*James T. L. Schwenk — Pa.
B.S. 1939, U. S. Military Academy

*Clarence Raymond Schwenke — Ohio
A.B. 1939, Ohio University

Franklin Earl Scott — N.M.
B.S. in M.E. 1934, B.S. in E.E. 1936, New Mexico State University

*Luther Rollin Seibert — Calif.
B.B.A. 1939, University of Oregon

*Harry Brown Sewell — S.C.
B.S. in Forestry 1938, University of Georgia

*Jack Kennard Sewell — Texas
B.S. 1942, North Texas State College

William Henry Shea, Jr. — Wash.
B.S. 1936, U. S. Naval Academy

*John Preston Sheffey — Va.
B.S. 1942, U. S. Military Academy

*Robert Milton Shoemaker — Ohio
B.S. 1944, U. S. Military Academy

*Robert Bryan Short — Nebr.
B.S. 1942, U. S. Military Academy
A.M. 1952, Columbia University

*Jimmie Lee Sibley — Texas
B.B.A. 1948, University of Houston
M.B.A. 1958, The George Washington University

Henry Turner Smith — Va.
B.C.S. 1940, Georgia State College of Business Administration

*Leslie Albert Smith — Texas
B.S. in Mil.Sc. 1957, University of Maryland

*Raleigh Delmer Smith — Oreg.
A.B. 1954, University of Portland

*William Mitchell Smith — Ala.
B.I.E. 1940, Alabama Polytechnic Institute

Ralph Fred Steinhauer — N.J.
B.S. 1954, Municipal University of Omaha
M.B.A. 1958, University of Michigan

*Francis Marvin Stone — Fla.
B.S. 1956, Florida Southern College

*Tom Billie Strother — Texas
B.S. in I.E. 1938, Agricultural and Mechanical College of Texas

*Jack Swaim — Ark.
B.S. 1940, Ouachita Baptist College

Thomas Randolph Taggart — Va.
A.B. 1932, University of New Mexico
LL.B. 1935, University of Texas

*Robert Edward Tauscher — Va.
B.S. 1939, Wake Forest College

*Lloyd Henry Thomas — La.
A.B. 1940, Union College

*Donald Melvin Thompson — Conn.
B.S. 1950, University of Maryland
A.M. 1958, Sacramento State College

*John William Thompson — N.J.
B.S. 1938, U. S. Military Academy
M.S.E. 1947, Cornell University

Clare Hayes Timberlake — Mich.
A.B. 1929, University of Michigan

*Floyd Harrison Trogdon — N.C.
B.S. in E.E. 1950, M.S. 1951, University of Maryland

Max Campbell Tyler — Va.
B.S. 1941, U. S. Military Academy
M.S. in C.E. 1949, University of Illinois

Elliott Vandevanter — Va.
B.S. 1939, U. S. Military Academy

*Mark Harvey Vinzant, Jr. — Pa.
A.B. 1940, Pennsylvania State University

*Herbert Waldman — Fla.
B.S. 1939, City College, New York
M.B.A. 1956, University of Michigan

*Wallace Creel Wardner — Okla.
A.B. 1955, University of Oklahoma

*Thomas Green Watkins, Jr. — Fla.
B.S. in M.E. 1937, Clemson Agricultural College

*Robert Oscar Welander — N.Y.
B.S. 1945, U. S. Naval Academy

*Robert Blaine Wells — Texas
B.S. in Agr. 1941, Kansas State University of Agriculture and Applied Science

*George Gillette White — Calif.
A.B. 1941, San Jose State College

John Milton White, Jr. — Va.
A.B. in Econ. and Bus. 1938, University of Washington

Kenneth Gregory Wickham — Va.
B.S. 1938, U. S. Military Academy

Charles Fred Widdecke — Texas
A.B. 1941, University of Texas

Arent Orvil Wiken — Va.
Ph.B. 1932, Ripon College

*Sherman Warner Wilkens — Conn.
A.B. 1949, University of Connecticut

*Daniel Binkley Williams — N.C.
B.S. in M.E. 1940, Georgia Institute of Technology

*William Milburn Williams — Fla.
B.S. in B.A. 1949, University of Florida

Ellis Warner Williamson — S.C.
A.B. 1940, Atlantic Christian College

*Robert Willis Wilson — Calif.
B.S. 1961, Oklahoma State University of Agriculture and Applied Science

*John Junior Windsor — Ala.
B.S. 1941, University of California

*William Daniel Wise, Jr. — Pa.
B.S. in Mil.Sc. 1957, University of Maryland

*Herbert Eric Wolff — Va.
B.S. 1956, University of Maryland

Robert Barrett Wood — N.H.
B.S. 1939, U. S. Naval Academy

*Charles Morton Young, Jr. — Va.
B.S. in C.E. 1942, Virginia Military Institute

John White Yow — Fla.
B.S.C. 1936, University of Georgia

JUNE 5, 1963

Thomas Harwell Barfield — Ala.
A.B. 1937, University of Alabama

Claudius Albert Beall, Jr. — Texas
B.S. in Textile Eng. 1933, Georgia Institute of Technology

George W. Best, Jr. — Pa.
B.S. in Ch.E. 1940, University of Pittsburgh

Edward Bruce Bissell — Mo.
A.B. 1936, University of Arkansas

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*Degree requirements completed summer 1962.

Edwin Fahey Black D.C.
B.S. 1940, U. S. Military Academy
James Joseph Blake D.C.
A.B. 1946, Queens College
John Keith Boles, Jr. Va.
B.S. 1939, U. S. Military Academy
Cullen Albert Brannon, Jr. Ga.
B.S. 1943, U. S. Military Academy
William Trantham Briggs Va.
A.B. 1938, American University
Charles Harris Brush, Jr. N.J.
A.B. 1937, Montclair State College
M.S.S. 1940, New School for Social Research
Bladen Dulany Claggett D.C.
B.S. 1935, U. S. Naval Academy
Ernest Thorpe Cragg Conn.
B.S. 1943, U. S. Military Academy
Henry Ashton Crosby N.H.
B.S. 1955, University of Maryland
Wayne Bertch Curren Calif.
A.B. 1962, University of Maryland
Franklin Milton Davis, Jr. Maine
A.B. 1940, University of Massachusetts
Joseph Rudolph De Luca Ohio
A.B. 1962, University of Maryland
Jack Norman Donohew Mo.
B.S. in Eng. 1933, University of Missouri
B.S. 1937, U. S. Military Academy
Roger Miles Dudley Calif.
B.S. 1937, U. S. Coast Guard Academy
Keith Philip Fabianich Fla.
A.B. 1939, West Virginia University
William Foley Va.
B.S. in Ch.E. 1932, University of Maine
William Lester Foster Texas
B.S. 1946, U. S. Naval Academy
Silas Gassett Okla.
B.S. in M.E. 1939, University of Oklahoma
Ulrich G. Gibboos Mo.
B.S. 1939, U. S. Military Academy
James Emmett Goodwin Mass.
B.S. 1936, U. S. Military Academy
Otto Reed Haney N.M.
A.B. 1950, University of Missouri
Roy Cleveland Haflebower, Jr. Texas
B.S. 1938, U. S. Military Academy
Claude Randolph Hinson S.C.
B.S. 1936, Clemson Agricultural College
James Francis Hollingsworth Texas
B.S. 1939, Texas Agricultural and Mechanical College
William McCaw Hughes Ala.
B.S. 1935, Alabama Polytechnic Institute
George Lyman Ingersoll Ohio
B.S. 1944, U. S. Military Academy
M.S.E. 1950, University of Michigan
Roy Lester Inman Colo.
B.S. in Mil.Sc. 1952, University of Maryland
Joseph Bowen Jeffers, Jr. D.C.
A.B. 1938, University of Alabama
Finis Garrett Johnson Tenn.
B.S. 1962, University of Maryland
George Marvin Johnson, Jr. Va.
B.S. 1960, University of Maryland
Luther Griffin Jones, Jr. Va.
B.S. 1961, University of Maryland
Robert Lawrence Kalen Mont.
B.S. 1940, U. S. Naval Academy
George William McCaffrey N.H.
B.S. 1940, University of New Hampshire
Eugene Orville McDonald Calif.
B.S. 1940, U. S. Military Academy
Paul David Phillips Colo.
B.S. 1940, U. S. Military Academy
Harold Lafler Price Fla.
A.B. 1941, Pennsylvania State University
Hayden John Price Texas
A.B. 1936, Stanford University
LL.B. 1940, University of Wyoming
James David Ramage Hawaii
B.S. 1939, U. S. Naval Academy
Irvin Marshall Rice Nev.
E.M. 1939, M.E.M. 1947, Colorado School of Mines
Leonard George Robinson N.Y.
B.S. 1932, Harvard University
Charles Francis Rogers Va.
A.B. 1954, Syracuse University
Jimmie Eldon Savage Texas
B.S. 1941, North Texas State College
Richard Martin Scott Pa.
B.S. 1942, U. S. Military Academy
Raymond Leroy Shoemaker Ind.
B.S. 1940, U. S. Military Academy
A.M. 1961, Stanford University
Donald Charles Shultis Fla.
B.S. 1951, University of Maryland
John Carlyle Smith Ga.
B.S. 1947, Michigan State University of Agriculture and Applied Science
Julian Edward Smitherman Fla.
B.S. 1962, University of Maryland
William Swinton Steele Wash.
B.S. 1936, U. S. Military Academy
Walter Joseph Stencil Ohio
B.S. 1937, U. S. Naval Academy
Michael J. Stublarec Pa.
A.B. 1950, Sacramento State College
Charles Benjamin Thomas Va.
B.S. 1942, Johns Hopkins University
Fletcher Read Veach, Jr. Calif.
B.S. 1943, U. S. Military Academy
Robert Chapman Williams, Jr. Ga.
B.S. 1939, U. S. Military Academy
William Avey Wood Texas
B.S. 1940, Rice University
Elmer Alexander Wrenn N.C.
B.S. 1938, University of North Carolina
Ralph Wright Va.
B.S. 1962, University of Maryland

MASTER OF BUSINESS ADMINISTRATION

FEBRUARY 21, 1963

•Jack Alvin Albright Miss.
B.S. in Mil.Sc. 1958, University of Maryland
•Gerald R. Almy Va.
B.I.E. 1956, General Motors Institute
Robert Britton Baker, Jr. Fla.
B.S. in E.E. 1942, University of Florida
•Nils Martin Bengtson Mass.
B.S. 1940, U. S. Military Academy
M.S. in E.E. 1948, Massachusetts Institute of Technology
•Raymond Andrew Bradley Okla.
B.S. 1948, University of Oklahoma
•Robert Duncan Brown, Jr. Va.
B.S. 1941, U. S. Military Academy
M.S. in C.E. 1947, Agricultural and Mechanical College of Texas
•William Spalding Chalmers Ala.
B.S. in C.E. 1941, Virginia Polytechnic Institute
•Harrington Willson Cochran, Jr. Calif.
B.S. 1941, U. S. Military Academy
M.E. 1950, Agricultural and Mechanical College of Texas
•Parker Rosenfild Colmer Va.
B.S. in B.A. 1938, Boston University
•George Moses Cookson Wash.
B.S. 1936, Montana State College

• Degree requirements completed summer 1962.

*Howard Stanley Corwin — Va.
A.B. 1940, Brooklyn College

David Stanley Crockett — Texas
B.B.A. 1939, University of Texas

*Harold Jesse Crumly — Fla.
B.S. 1939, Georgia Institute of Technology

Fred James Frazer — Fla.
B.S. 1940, Ohio University

James Setom Gray, Jr. — Mich.
B.S. 1936, U. S. Naval Academy

*William Hughes Hard — Ala.
B.S. in Mil.Sc. 1960, University of Maryland

Fred E. Hild — Fla.
A.B. 1934, Coe College

*David Dale Hutchens — Mich.
Graduate 1948, Air Force Institute of Technology

*Jack Clarence Ledford — Ohio
B.S. 1949, Ohio State University

Edgar Roland McDaniel — Va.
B.S. 1940, Virginia Polytechnic Institute
M.E.A. 1958, The George Washington University

*Martin Ignatius McHugh — Md.
LL.B. 1941, Catholic University of America

Hugh Quin Murray — Va.
B.S. 1934, U. S. Naval Academy

Terrell Andrew Newcomer — Calif.
B.S. 1932, U. S. Naval Academy

*Philip Jordan Noel, Jr. — Ky.
B.S. 1937, Western Kentucky State College

*Clarence Shaffer Parker — Texas
B.S. in Mil.Sc. 1962, University of Maryland

*James Jerome Shaug — Calif.
A.B. 1936, Santa Barbara City College

*William Alexander Shryock — Calif.
A.B. 1939, University of Minnesota

Kendall Washburn Simmons — R.I.
B.S. 1941, U. S. Naval Academy
A.M. 1948, University of California at Los Angeles

*James Thompson Stewart — Mo.
B.S.E. (Aero.) 1948, University of Michigan

Ralph Bishop Strader — Va.
B.S. 1929, U. S. Military Academy

*Harold Charles Teubner — Texas
B.S. 1948, Agricultural and Mechanical College of Texas
M.S. in Aero. Eng. 1951, Massachusetts Institute of Technology

Raymond Webb Thompson, Jr. — Md.
B.S. 1933, U. S. Naval Academy
M.S. 1941, Massachusetts Institute of Technology

August Lincoln Vogt — Texas
B.C.E. 1933, University of Minnesota

*Ernest Albert Henry Woodman — Mich.
A.B. 1940, University of Alabama
B.S. 1959, University of Michigan

*Benjamin Fessenden Worcester II — N.H.
B.S. 1940, University of New Hampshire

Archie Taylor Wright, Jr. — D.C.
B.S. 1933, U. S. Naval Academy

Donald Lee Yeager — Md.
B.S. in M.E. 1941, Purdue University

JUNE 5, 1963

Philip Gillespie Asher — Va.
B.S. in Ed. 1935, Southeast Missouri State College

Wilton Lee Atkinson — Va.
B.S. 1944, U. S. Naval Academy

Graham Charles Bonnell — Va.
B.B.A. 1941, Tulane University

Lee Byron Brownfield — N.J.
B.S. 1942, The Citadel
M.S. 1950, University of Wisconsin

William Ernest Carver — Mont.
B.S. 1941, U. S. Naval Academy

Raymond Maurice Clock — Fla.
B.S. 1946, U. S. Military Academy
M.S. 1947, California Institute of Technology

George William Dickerson — Ohio
B.S. 1941, Virginia Polytechnic Institute
M.S. 1956, Ohio University

James Carmichael Donaldson, Jr. — Fla.
B.S. 1942, U. S. Naval Academy

Maurice E. Esch — Ill.
A.B. 1962, The George Washington University

Louis Frank Felder — Va.
B.S. 1952, University of Maryland

Norman Gray — Iowa
B.S. 1936, Drake University
A.M. 1950, University of Southern California

George Edward Hesselbacher, Jr. — Pa.
B.S. 1942, U. S. Military Academy
M.S. 1949, Colorado School of Mines

Jack Milton James — Va.
B.S. 1941, U. S. Naval Academy

Morton Haynes Lytle — Okla.
B.S. 1937, U. S. Naval Academy

Robert Allen Merchant, Jr. — Md.
B.S. in E.E. 1946, Virginia Military Institute

Warren Edward Morrison — Va.
B.S. in F.S. 1948, Georgetown University

William Eugene Payne, Jr. — Va.
B.S. 1943, U. S. Naval Academy

Robert Ris Ploger — Mich.
B.S. 1939, U. S. Military Academy
M.S.E. 1946, Cornell University

Jack Conrad Potter — Va.
B.S. 1962, University of Maryland

Alfred George Russillo — N.Y.
B.S. 1943, U. S. Naval Academy

Frederick Adair Smith, Jr. — Texas
B.S. 1944, U. S. Military Academy
M.S. 1949, Johns Hopkins University

Edward Charles White — Maine
B.S. 1944, U. S. Naval Academy

Marcus William Williamson — Va.
B.S. 1932, U. S. Naval Academy

Curtis Ballard Wise — Va.
B.S. 1941, University of Colorado

THE GRADUATE COUNCIL

DOCTOR OF PHILOSOPHY

FEBRUARY 21, 1963

Joseph Patrick Gilmore — Md.
B.S. 1951, M.S. 1952, St. John's University
DISSERTATION: "The Influence of Arterial Baroreceptors on Renal Function"

Elizabeth Katz Hackett — D.C.
A.B. 1952, Radcliffe College
A.M. 1955, Boston University
DISSERTATION: "The Relationship of Authoritarian Submissiveness to Response to Therapy in Anxiety Neurosis"

* Degree requirements completed summer 1962.

Emanuel Horowitz — Md.
B.S. 1948, City College, New York
M.S. 1956, The George Washington University
DISSERTATION: "Coordination Polymers of Bis(8-Hydroxyquinoline) Derivatives"

Howard Marvin Katzen — Mass.
B.S. 1956, Johns Hopkins University
M.S. 1958, The George Washington University
DISSERTATION: "Hepatic Glutathione-insulin Transhydrogenase"

Christ William Kyriazis — D.C.
A.B. 1948, A.M. 1949, The George Washington University
DISSERTATION: "A Comparison of Physically Assaultive Prisoner Mental Patients and Normal Controls with Respect to Ideal-actual and Self-other Semantic Distances"

William Robert Sterling — N.Y.
B.S. 1953, Philadelphia College of Pharmacy and Science
M.S. 1954, Ohio State University
DISSERTATION: "Studies on the Metabolism and Mechanism of Action of 1-Aminocyclopentane-1-Carboxylic Acid"

Norman Aaron Walensky — N.J.
B.S. 1957, Muhlenberg College
M.S. 1959, The George Washington University
DISSERTATION: "A Study of Anterior Femoral Curvature in Man"

Regis Hills Walther — Va.
A.B. 1941, University of California at Los Angeles
A.M. 1960, The George Washington University
DISSERTATION: "The Prediction of Occupational Adjustment Through Measured Behavioral Styles"

JUNE 5, 1963

Concordia Rivera Borja — D.C.
B.S. 1950, University of the Philippines
M.S. 1959, Purdue University
DISSERTATION: "The Role of Bile and Cholesteral Esterase in Cholesteral Absorption"

William Mervin Crabbe, Jr. — Conn.
A.B. 1950, The Citadel
M.P.A. 1958, Harvard University
DISSERTATION: "Consensus Through Slogan: The Policy of Unconditional Surrender in the Second World War"

Suzanne Doane Hill — Va.
A.B. 1953, A.M. 1955, The George Washington University
DISSERTATION: "The Performance of Young Children on the Object Discrimination, Oddity, and Conditional-oddity Problems"

Mary Alida Holman — Texas
A.B. 1955, A.M. 1957, The George Washington University
DISSERTATION: "The Utilization of Government-owned Patented Inventions"

Julian Hoptman — Va.
B.S. 1948, City College, New York
A.M. 1950, Pennsylvania State University
DISSERTATION: "Association of Stimulation and Depression of Parasympathetic Nervous System Activity with Hemagglutination-Inhibition Response in Albino Rats"

Andrew Jackson — Va.
A.B. in Govt. 1942, A.M. in Govt. 1953, The George Washington University
DISSERTATION: "The Development of the Subjective Theory of Value Through the Eighteenth Century with Special Emphasis upon Condillac"

Francis Joseph Kase — D.C.
Dr.jur. 1934, University of Prague, Czechoslovakia
Dipl.Sc.Pol. 1935, Academy of Political Science, Prague, Czechoslovakia
DISSERTATION: "The Soviet Theory of People's Democracy; A Contribution to the Study of the Proletarian State"

Robert Marx Mayer — Md.
A.B. 1957, West Virginia University
M.S. 1959, The George Washington University
DISSERTATION: "*In vitro* Studies of Cholesterol Absorption"

Richard Rolland Mertz — Md.
Ph.B. 1946, B.S. 1948, A.M. 1953, University of Chicago
DISSERTATION: "The Diplomats and the Dictator: A Study of Western Diplomatic Reactions to the Rise of Hitler, September 1930–November 1933"

Earl Carlyle Suitor, Jr. — D.C.
B.S. 1952, University of Massachusetts
M.S. 1958, The George Washington University
DISSERTATION: "The Biology of Rickettsialike Microorganisms"

HONORARY DEGREES

FEBRUARY 21, 1963

William Chapman Foster—*Doctor of Public Service*

JUNE 5, 1963

Edith Koon Carr—*Doctor of Laws*
Sheldon Glueck—*Doctor of Social Science*
Caryl Parker Haskens—*Doctor of Science*
James Gilmer McManaway—*Doctor of Humane Letters*

RECIPIENTS OF AWARDS

1963–64

FELLOWSHIPS

American Security and Trust Company Fellowship: Phillip Donald Grub, A.B. in Ed., M.B.A.

National Defense Graduate Fellowships: Emilienne Jeanine Baker, A.B.; Ross Lorraine Crow, A.B.; Judith Ringgold Docca, A.B.; Ingrid Helga Henkels, A.B.; James Wallace Hutcheson, A.B.; Beatrice Hauer Johnson, A.M.; David Ernest Prowse Johnson, A.M.; Marilyn Waggener Korin, A.M.; Patricia Evans Kreutzer, A.B.; Warren John Kulas, A.B.; Natalie Frances Lagana, A.B.; June Diane Lively, A.B.; Nancy Carolyn Mustafa, A.B.; Ruta Marija Penkiunas, A.B. in Ed.; Kay Frances Pitt, A.B.; Carl Steiner, A.B. in Ed., A.M.; Inge Brigitte Wekerle, A.B.

Scottish Rite Fellowships:

Arizona Scottish Rite Fellow of the Consistories of Arizona: Frederick L. Montgomery, A.B.

California Scottish Rite Fellows of the Consistories of California: Jack M. Horner, A.B.; James R. McKenzie III, A.B.; Richard B. Webb, A.B.

Colorado Scottish Rite Fellow of the Consistories of Colorado: Donald L. McMillen, A.B.

Hawaii Scottish Rite Fellow of the Consistories of Hawaii: John P. Richardson, A.B.

Iowa Scottish Rite Fellow of the Consistories of Iowa: Stephen T. Adams, A.B.

Kansas Scottish Rite Fellow of the Consistory of Wichita: Angie L. Magnusson, A.B.

Louisiana Scottish Rite Fellow of the Consistory of New Orleans: Carl H. Degel, A.B.

Mississippi Scottish Rite Fellows of the Consistories of Mississippi: Jack H. Ewing, Jr., A.B.; William C. Goolsby, A.B.

Missouri Scottish Rite Fellow of the Consistories of Missouri: Mary C. Hunt, A.B.

Montana Scottish Rite Fellows of the Consistories of Montana: James Byron Christian, A.B.; Robert N. Sankovich, A.B.

North Carolina Scottish Rite Fellow of the Consistories of North Carolina: Joseph W. Grimsley, A.B.

Oklahoma Scottish Rite Fellows of the Consistories of Oklahoma: Randall J. Jones, Jr., A.B.; John H. Marlin, A.B.; Conrad F. Morrow, A.B.

Oregon Scottish Rite Fellow of the Consistories of Oregon: Fred Ellis McLaughlin, B.S.

South Dakota Scottish Rite Fellow of the Consistories of South Dakota: James C. Randall, A.B.

Texas Scottish Rite Fellows of the Consistories of Texas: James Gaylord Armstrong, A.B.; Paul W. Hilburn, A.B.

Virginia Scottish Rite Fellows of the Consistories of Virginia: John N. Ellison, M.S.; Robert C. Herold, A.B.; John R. Vandermark, B.S.

Washington Scottish Rite Fellows of the Consistories of Washington: Kenneth L. Smith, A.B.; Robert K. Yearout, A.B.

West Virginia Scottish Rite Fellow of the Consistories of West Virginia: O. Edwin Stump III, A.B.

Wyoming Scottish Rite Fellow of the Consistories of Wyoming: Dennis L. Jones

Wolcott Foundation Scholarships:

California Wolcott Scholar: William C. Cline, A.B.

Kansas Wolcott Scholar: Janet Morrissey Senz, A.B.

Louisiana Wolcott Scholar: Vassiliki Koula Economos, A.B.

For the names of Fellows who serve as Assistants in Research and Instruction and for Assistants in the School of Medicine, see pages 404–8.

SCHOLARSHIPS

Alpha Zeta Omega Scholarship: Jane Ellen Canterbury

Alumni Scholarships: Robert A. Aleshire, Richard C. Allen, William B. Benton, Diana J. Blodgett, Edward W. Gnehm, Jr., Katherine A. Haun, Steven Z. Kahn, Hiram Knott,

Robert T. Levine, Ronald E. Pump, Stanley R. Remsburg, Thomas R. Robinson, Paul M. Schwab, Daniel E. Spector, Jeffrey B. Springer, Ann W. Thompson

American Legion Auxiliary Scholarship: Patricia Marie Maliar

American Foundation for Pharmaceutical Education Scholarships: Barbara Baker, Alexander Leeds

American Society of Women Accountants Scholarship: Rita Rigas

Byron Andrews Scholarship: Jill Linda Warren

Anonymous Scholarship: Sherrill J. Slichter.

Association of Federal Communications Consulting Engineers Scholarship: Ivan S. Kayrukov

Avalon Foundation Scholarship Fund: Anthony Anderson, Harold Anderson, John F. Brady, Robert W. Bright, Joel Brown, David Burdge, Robert E. Byler, Edward B. Byrd, Andrew B. Carlsen, Dwight Carlson, Richard Carvalho, Peter D. Clarisse, Ronald D'Altorio, Charles Y. Davis, William H. Dermody III, Donald F. Farrell, Richard S. Finn, William C. Flanagan, William Fortune, Theodore R. Gelet, Peter L. Greenberg, Jack Harvey, Paul Herwick, Raymond Herzinger, Robert Hodgel, John L. Holmes, Leslie M. Hovey, Stanley Huffman, John R. Hushaw, Andrew Koo, Joel L. Koslow, Lawrence Lobl, Jerome S. Mayersak, Keith W. Merrill, David K. Millward, Austin Moede, Robert Peabody, Lawrence Politz, Robert Rabbitt, Russell Rice, James T. Shaw, Harold Shively, Robert Steinbrenner, Herbert Suesserman, Richard Takaki, Charles Tettmeyer, Arthur Ugel, Egil Veverbrants, Allen White, Leonard Wotovsky, DeVere Gareth Wooton, Robert Zappia, Jack Zimmermann

Anna Bartsch Hospital Intern Scholarship: Gloria Godby Brennan, A.B., M.D.

Anna Bartsch Medical Student Scholarship: Barbara M. Kadell

Everett Lamont Bradley Scholarship: Seymour Gendelman

Frederick Albert and Alma Hand Britten Scholarships: Conrad S. Bell, Shanti P. Chakravarty, Philip Chen, Alesandro Cherici, John Carlisle Christie, Ely Fishlowitz, Herbert James Garner, Jr., Charles S. Herbert III, Martin R. Hum, Douglas L. Jones, Allyn Kilshimer, Joong S. Lee, Douglas MacDonald, Frank Moy, John N. Nemechek, Ant Singh Ratra, Dillon F. Schofield, Richard T. Shearer, Louis Paul Wagman, John D. Wills

Brooklyn Alumni Club Scholarship Fund: Gerald S. Lazarus

Emma K. Carr Scholarships: Frederick M. Acker, Samuel Robert Blate, Kevin Storey Bouche, Donald L. Eddins, Eric Michael Fine, Martin J. Gersten, Stanley Holstein, Leslie Hubbard, Hisakazu Ikijiri, Richard Eugene Morlan, Alan Wise

Henry Harding Carter Scholarship: John N. Nemechek

Maria M. Carter Scholarship: Baruch Abraham Fellner

Joseph Collins Foundation Scholarship: John E. Hutton, Jr.

Colortone Graphic Arts and Publications Scholarship: Toby Caroline Hauptmann

Columbian Women Scholarships: Doris J. Armijo, Shirley Berezesky, Sandra Boorstein, Barbara Englander, Leah Figelman, Sharon L. Glenn, Norma Goldstein, I'Leta Hankley, Nancy Little, Mary Jane McClellan, Jeanette Murphy, Angelika Naumann, Patricia Poindexter, Sharon A. Ringel, Sherrill Slichter, Jill Warren

Mary Covington Memorial Scholarship: James A. Williams

Crown Photo Scholarship: Richard Lewis Stein

Daughters of the American Revolution Scholarship: Carol Steele Shively

Isaac Davis Scholarship: Judith Ellen Kliston

Debate Scholarship: Thomas E. Harris

Charles Worthington Dorsey Memorial Scholarship: Alvin Capp

Estella Constance Drane Scholarship: Mary Elizabeth Musselman

School of Engineering and Applied Science Scholarships: Carlos A. Alonzo, Ashok Kalekar, Billy R. Lanier, Francis S. LeBeau, Charles Glenn Moody III, Thomas Albert Nivert, John William Starke

Henry Parsons Erwin Scholarship: Douglas L. Jones

Robert Farnham Scholarship: Susan Banes Harris

Esther Brigham Fisher Scholarship: Susan Banes Harris

Foreign Service Scholarships: Stewart Bentley, Ruth Cone, Sandra Morrison, Elizabeth O'Brien

General Motors College Scholarships: John Gordon Day, Sherri Nell Lancaster, Thomas E. McIntosh

Georgetown Business and Professional Woman's Club Scholarship: Maryland Hartge

Grants-in-Aid Scholarships: Joseph J. Adamitis, Arthur D. Annandale, Donald Ardell,

Robert W. Armstrong, Philip Aruscavage, Robert Barnes, Clifford Botyos, Thomas M. Branch, Peter M. Brindisi, William Brzezenski, Thomas A. Cerul, Michael A. Checkan, Ronald A. Cindrich, Ronald M. Clancey, Mark S. Clark, Charles W. Collett, Raymond D. Cushman, Irvin W. Dieterle, John Donello, Jr., Frederick D'Orazio, Richard R. Drummond, Richard L. Duenkel, Henry Duques, Donald Dworkin, Gary A. Fanucci, Edward A. Farrell, George A. Ferguson, Paul Flowers, Anthony Fredicine, Terry Free, John Gera, Joseph W. Glass, Thomas T. Graham, Alan Green, James Greer, Louis M. Gross, Arthur H. Gubitosa, Leonard B. Gunsior, Richard Ham, Robert L. Haney, Harvey Harrison, Harry H. Haught, Neil G. Hausig, Joseph Heilman, Horace M. Henson, John W. Hill, Timothy Hill, Merwin W. Holland, Gary F. Holloman, Michael J. Holloran, Richard J. Hornfeck, James M. Johnson, Peter B. Krause, Joseph S. Kun, Albert Kwiecinski, Stephen A. Lapko, Donald S. Lauer, Kenneth E. Legins, Stephen Lewis, Kurt J. Lindstrom, Robert J. Lukomski, Harvey Malhs, Douglas McNeill, Robert Miltenberg, George Montalvan, William Moyer, Joseph W. Mullan, John Mullen, Paul J. Munley, Robert Murphy, John Nalls, David D. O'Neal, John A. Papanicolas, William Pashe, Robert J. Passeri, Frank B. Pazzaglia, Donald C. Perriello, John P. Pilconis, John Plava, Leon T. Pollock, Emil Rapp, Charles B. Reed, Gerald E. Ricucci, Anthony Romasco, Jr., Seth Rose, Stephen Rubin, Jerry Rudy, Edward J. Ruppert, Rudolf Russart, Wayne Schiebel, Gary G. Scollick, David Shearman, Mark Sherry, Daniel Singer, David Smith, Robert Smith, David P. Sparks, Robert Stiffler, Morris Sutter, Elliott C. Swift, Ronald Ullrich, Mark L. Welker, Stephen Welpott, Robert S. White, Frederick Yakin, Dominic Zacarelli, Rudolph Zeiger, John Zier, Robert Zier

Mildred Green Memorial Scholarship Fund: Susan Banes Harris

Anna Spicker Hampel Scholarship: Elinor Wilson Magnuson

Elma Lewis Harvey Scholarship: Marilyn June Evans

Hazelton Scholarship: Sharon Lee Glenn

High School Scholarships: Sandra J. Bergman, Janet F. Borkey, Sidney F. Bosen, Carol J. Brezil, Carolyn J. Brock, Joan H. Broome, Stephen C. Brown, Cheryl D. Buffet, Thomas A. Cabarga, Gisela A. Caldwell, Donna G. Clarke, Helen C. Clark, Martin P. Claussen, Jane F. Coleman, Mary L. Cross, Richard Cunningham, Robert N. DeAngelis, Charlotte K. Diltz, Leland G. Drabin, Virginia W. Dyer, Matthias A. Ebner, Norman A. Eisenberg, Joseph L. Evans, Marvin J. Feldman, Rita J. Ferrara, Janice L. Fogle, Rita E. Forman, Katherine Fritzinger, Earl L. Gaddie, Ellen R. Garfield, Allan B. Goldberg, Edward Goldman, Cheryl A. Grossman, Jane E. Halperin, Leonard R. Hanitchak, Maureen I. Harris, Michael M. Hart, H. H. Heclo, Robert G. Heinze, Linda M. Hill, Mary M. Howell, Lynda L. Huesman, Paul A. Insel, Judith Jacobs, Patricia M. Jones, Marjorie E. Killian, Jay J. Kingham, Epp A. Laane, Robert L. Levine, Frances L. Lee, Joyce Lewis, Joan I. Lidoff, Olivia A. Lucas, Verne J. McCullen, Mary E. Maddox, Michael T. Madison, Harold E. Marshall, Alice M. Martinson, Barbara J. Miller, Clark C. Miller, Mary E. Musselman, Janice F. Niblett, Jesse D. Nolph, David V. Nooman, Marily J. Norrie, Linda C. Nusbaum, Ina M. Orwicz, Anne L. Pallas, William G. Parke, Martin J. Petersilia, Constance E. Philips, Robert Millman, Beth A. Pierce, Joseph B. Pineus, Ruth E. Rendely, John W. Robinson, Nancy G. Rosenberg, John J. Rowsey, Mary E. Sanders, Joan M. Saunders, Bonnie L. Selinsky, Arlene T. Shapiro, Joel I. Shulman, Arthur J. Sober, Maxine E. Solomon, Elaine P. Tannebaum, Mary C. Thom, Mary L. Thomas, John W. Tucker, Paula Turney, Carol A. Vaden, Evangeline S. Wells, Thomas P. Whitaker, Sharon L. Wolfe, M. E. Wrenn, Faye J. Yee

Howard Henry Howlett Scholarships: Shirley Berezesky, John Brain, Linnis Cook, Michael Rigas, Curtis Smith, Dominic Sorrentino, Freda Sussman, Alan Wise

Insurance Woman's Club of Washington, D. C., Scholarship: Janet E. Fisher

Robert Woods Johnson Scholarship Fund: Martin Horowitz, Robert R. Wolf

Kappa Alpha Theta Scholarship: Bernard Patrick Cox

Kappa Kappa Gamma Scholarship: Sandra Loube

Kappa Psi Scholarship: Hanna R. Klein

Ki Wines Scholarship: Neil D. Ward, Elizabeth B. Young

Law School Scholarships: Joseph Brand, Robert Comeau, Stuart Fischbein, Rafael Guzman, Timothy Healy, John Holcombe, Charles Hopkins, John Jenkins, Jonathan Johnson, Harold Kennedy, Robert Krumme, Linda Lee, Henry Levine, David Lilly, William Railton, Robert Richards, Douglas Rigler, John Seanor, John Stokes, Kirby Turnage, Fred Schornhorgt, Richard Vipond

Lederle Laboratories Scholarships: Andrew Koo, Richard R. Rice

Henry C. Lewis Scholarships: Louis Pohoryles, Robert H. Quenon, Lee E. Walker, Ronald D. West

Eugene and Agnes E. Meyer Scholarships: Ruth Day Burtnick, Jessica Sybil Byczynski, Dorothy Sandra Cain, Barbara Joy Englander, Leah Figelman, Jean Marie Gladding, Margaret J. Jess, Virginia Lorenze Menzer, John Kent Minichiello, Jeanette Murphy, Arlene Rita O'Connor, Sharon Ann Ringel, Abigail Ann Salyers, Jill Linda Warren, Jacques Cedric Young

Thomas F. Milbank Scholarship: Elinor Wilson Magnuson

A. Morehouse Scholarship: Donald Leroy Gokee

National Institutes of Health Scholarships: Grant P. Bagley, Harry Beaver, Anthony D. Blau, Robert W. Bright, Francis Burton, Robert E. Byler, Edward B. Byrd, Paul Cohen, Leslie Dornfeld, Kent Hardy, Jack Harvey, John L. Holmes, Martin Horowitz, Ronald O. Hurston, Cecil Jonas, Sheldon Kaplan, Jerry M. Lyle, Jerome S. Mayersak, Robert L. Moesinger, Ruthann Pick, Eugene Trout, Arthur Ugel

Newspaper Scholarships: Robert Alden, Thomas F. Dimond, Paul R. Lewis, Mary M. Olshine, Joseph M. Porter, James R. Threatle

Paul Pearson Scholarship: Anthony J. De Luca

Charles Pfizer Medical Scholarship: Walter S. Yourchek, Jr.

Phi Delta Delta Scholarship: Linda K. Lee

Phi Delta Gamma Scholarship: Nora Albertina Eisenbach

Levin M. Powell Scholarship: David Cornelius McLaughlin

Prince Georges-Montgomery County Pharmaceutical Association Scholarship: Chester Le Roy Wilson

Mabel Wilson Richards Scholarship: Ulla Masin Fortune

Lula M. Shepard Scholarships: John Lawrence Diesm, Margaret J. Jess, David Guy McGunegle

David Spencer Scholarship: Virginia Lee Poters

David Perry Steinman Memorial Scholarship Fund: Anthony J. Mathios

Mary Lowell Stone Scholarship: Abigail Ann Salyers

Tau Kappa Epsilon Scholarship: David Guy McGunegle

Tobacco Institutes Research Committee Scholarship: Robert E. Byler

Traveler's Auxiliary of the District of Columbia Pharmaceutical Association Scholarship: Sister Regina Marie

University Hospital Scholarships in Medical Technology: Karin Connell, Pamela Peter, Janice Wald

William Walker Scholarship: Donald LeRoy Gokee

Barbara G. Wendt Scholarship: Phyllis Park

John Withington Scholarship: Sharon Lee Glenn

Women's Auxiliary of the District of Columbia Pharmaceutical Association Scholarship: Dorothy S. Cain

Ellen Woodhull Scholarship: Kevin Bouche

Zonta Club of Washington, D. C., Scholarship: Carol Ann Nyquist

PRIZES

Alpha Chi Sigma Freshman Awards in Chemistry: Brian Charles Holober, Arlene Terry Shapiro, Maxine Elaine Solomon

Alpha Chi Sigma Senior Award in Chemistry: Sidney Frederick Bosen

Alpha Delta Pi Award in Scholarship and Leadership: Jill Linda Warren

Alpha Kappa Psi Award in Commerce: Michael Thomas Madison

Alpha Zeta Omega Award in Pharmacy: Richard Louis Stein

American Institute of Chemists Award in Chemistry: Sidney Frederick Bosen

American Pharmaceutical Association Award in Pharmacy: Norman David Rubin

Norman B. Ames Memorial Award in Engineering: Douglas Linwood Jones

Byrne Thurtell Burns Award in Organic Chemistry: Sidney Frederick Bosen

Martin L. Cannon Memorial Award in Pharmacy: Carol Ann Frame

Wilbur J. Carr Award to that man in the graduating class who has demonstrated outstanding ability in his study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant: John Gordon Day

Chemical Rubber Company Award in Physics: **Arthur Joel Sober**
Chi Omega Award in Social Sciences: **Sharon Ann Ringel**
Columbian Women Award to the graduating senior woman who in her undergraduate life has most nearly fulfilled the objectives of Columbian Women: Sharon Lee Glenn
John Henry Coules Awards in Government: Judith Ellen Kliston, Stanley Ray Remsberg
DeWitt Clinton Croissant Award for an essay on drama or the theater: **Marya Anne Mooney**
E. K. Cutter Award in English: Frances Ryan Burdette
Isaac Davis Awards in Public Speaking: Virginia Ruth Noble Berkenbilt, Robert Arthur Aleshire, **Girard Hayden Rodgers, Jr.**
Delta Gamma Award for Scholarship, extracurricular activities, and service to the University: Patricia Margaret Jones
Delta Zeta Award in Biology: **Stephen Henry Van Devanter**
Elton Award in Greek: Archibald Mulford Woodruff III
School of Engineering and Applied Science Distinguished Scholar to the senior who graduates with the highest scholastic standing: **Lee Kaminetzky**
Jesse Frederick Essary Award to that student who has given promise of sound citizenship and ability in "forthright reporting": Beth Ann Pierce
Joshua Evans III Memorial Award to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows: Stanley Ray Remsberg
Willis E. Fitch Memorial Award in Chemistry: Sidney Frederick Bosen
Allie S. Freed Award to that member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of Preventive Medicine: Ralph Eddye Koldinger
Charles Glover Award to that student in the Law School who has attained the highest average grade in the third-year, full-time course: Harold Fred Kennedy
Alice Douglas Goddard Award in American Literature: Patrick William Doyle
Edward Carrington Goddard Award in French: **Hannah Jane Tague**
James Douglas Goddard Award in Pharmacy: Anthony Joseph De Luca
Morgan Richardson Goddard Award in Commerce: Michael Thomas Madison
Hamilton Watch Award in Engineering: **Harvey Joseph Flatt**
Alec Horwitz Award to the senior in the School of Medicine who has demonstrated exceptional proficiency in the field of Surgery: **Thomas Folk Minas**
Gardiner G. Hubbard Memorial Award in United States History: Martin Irwin Freed
Kappa Kappa Gamma Award in Biology: **Jack Paul Pinion**
John Bell Larner Award to that member of the graduating class of the Law School with the highest scholastic standing: Don Walter Martens
Huron W. Lawson Award in Obstetrics and Gynecology: Howard Lund Judd
Lawyers' Title Award for excellence in the law of real property: Robert Graham Knechtel
Martin Mahler Award in Materials Testing: Robert Hayes Sullivan
Mortar Board Award to the woman student in the Sophomore Class having a scholastic standing of B or higher and the most outstanding record in activities: Lois Beth Barder
Julius S. Neviaser Award in Orthopedic Surgery: Seymour Gendelman
Omicron Delta Kappa Award to that member of the Senior Class who, throughout his course, has done the most constructive work in student activities: **Stanley Ray Remsberg**
John Ordronaux Award to that member of the graduating class of the School of Medicine with the highest scholastic standing: Thomas Folk Minas
Phi Delta Kappa Award in Teacher Education: **Frank Benjamin Pazzaglia**
Phi Eta Sigma Award to the beginning male student attaining the highest scholastic average in his first full semester of work: **Brian Charles Holober**
Pi Beta Phi Award to that member of the Senior Class who, throughout her course has done the most to promote student activities: Linda Carol Nusbaum
Pi Lambda Theta Award in Teacher Education: Judith Wallington
Psi Chi Awards in Psychology: Jesse D. Nolph, Charles Wesley Swisher
Ruggles Award in Mathematics: John Kent Minichiello
Sigma Kappa Award in Chemistry: **Kenneth Allan Chayt**
James MacBride Sterrett, Jr., Award in Physics: **Morton Frank Taragin**

SUMMARY OF REGISTRATION

1962–63

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

	Fall Semester			*Spring Semester*		
	Men	Women	Total	Men	Women	Total
Lower Division	1,075	1,104	2,179	1,016	993	2,009
Upper Division	422	449	871	430	461	891
Graduate Division	350	208	558	323	221	544
Total	1,847	1,761	3,608	1,769	1,675	3,444

THE GRADUATE COUNCIL

Doctor of Philosophy	203	63	266	212	70	282
Unclassified	3	1	4	3	1	4
Total	206	64	270	215	71	286

THE SCHOOL OF MEDICINE

Doctor of Medicine	357	21	378	358	21	379

THE LAW SCHOOL

Bachelor of Laws and Juris Doctor	811	34	845	743	36	779
Unclassified	10	—	10	7	—	7
Total	821	34	855	750	36	786

THE GRADUATE SCHOOL OF PUBLIC LAW

Graduate	38	—	38	42	1	43
Unclassified	31	1	32	33	1	34
Total	69	1	70	75	2	77

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Undergraduate	556	10	566	543	7	550
Graduate	599	4	603	630	4	634
Unclassified	83	1	84	70	—	70
Total	1,238	15	1,253	1,243	11	1,254

THE SCHOOL OF PHARMACY

Undergraduate	19	11	30	21	10	31
Unclassified	—	—	—	1	—	1
Total	19	11	30	22	10	32

THE SCHOOL OF EDUCATION

	Fall Semester			*Spring Semester*		
	Men	Women	Total	Men	Women	Total
Undergraduate	60	174	234	56	182	238
Graduate	271	236	507	261	250	511
Unclassified	19	53	72	24	27	51
Total	350	463	813	341	459	800

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

Undergraduate	207	71	278	219	77	296
Graduate	609	58	667	646	59	705
Unclassified	39	4	43	23	1	24
Total	855	133	988	888	137	1,025

COLLEGE OF GENERAL STUDIES CAMPUS DIVISION

Undergraduate	69	15	84	69	16	85
Graduate	38	2	40	38	1	39
Unclassified	13	10	23	12	8	20
Total	120	27	147	119	25	144

THE DIVISION OF UNIVERSITY STUDENTS

University Students	1,178	690	1,868	1,062	641	1,703

SUMMARY

Undergraduate	2,408	1,834	4,242	2,354	1,746	4,100
Graduate	3,276	626	3,902	3,253	663	3,916
Unclassified	1,376	760	2,136	1,235	679	1,914
Total	7,060	3,220	10,280	6,842	3,088	9,930

SUMMER SESSIONS 1962

Students Registered				2,454	1,424	3,878

COLLEGE OF GENERAL STUDIES OFF CAMPUS DIVISION*

Degree Candidates	1,394	89	1,483	1,329	81	1,410
Nondegree Candidates	2,966	1,011	3,977	2,479	743	3,222
Total	4,360	1,100	5,460	3,808	824	4,632

Summer Sessions 1962—credit students 1,741; noncredit students 111.

* Fall 1961—credit students 3,907; noncredit students 200; T.V. 126. Spring 1962—credit students 3,507; noncredit students 217; T.V. 18.

TEACHING STAFF

Professors Emeritus	49
Professors	156
Research Professors	4
Adjunct Professors	6
Exchange Professor	1
Visiting Professor	1
Visiting Research Professor	83
Professorial Lecturers	26
Clinical Professors	86
Associate Professors	4
Associate Research Professors	1
Visiting Associate Professor	55
Associate Clinical Professors	62
Associate Professorial Lecturers	165
Associates in the School of Medicine	99
Assistant Professors	12
Assistant Research Professors	1
Visiting Assistant Professor	116
Assistant Clinical Professors	103
Lecturers	31
Instructors	166
Clinical Instructors	57
Associates (nonmedical)	39
Fellows in the School of Medicine	3
Fellows (nonmedical)	25
University Teaching Fellows	33
Graduate Teaching Assistants	25
Technicians	
TOTAL	1,410

DEGREES CONFERRED 1962–63

Advanced Professional Certificate (Education)	14
Associate in Arts (College of General Studies)	35
Associate in Arts (Columbian College of Arts and Sciences)	89
Bachelor of Arts (College of General Studies)	100
Bachelor of Arts (Columbian College of Arts and Sciences)	272
Bachelor of Arts in Education	80
Bachelor of Arts in Government	53
Bachelor of Business Administration (College of General Studies)	7
Bachelor of Business Administration (School of Government, Business, and International Affairs)	65
Bachelor of Civil Engineering	9
Bachelor of Electrical Engineering	39
Bachelor of Laws	215
Bachelor of Mechanical Engineering	9
Bachelor of Science	43
Bachelor of Science in Cartography (College of General Studies)	3
Bachelor of Science in Engineering	8
Bachelor of Science in Home Economics	10
Bachelor of Science in Medical Technology	2
Bachelor of Science in Pharmacy	19
Bachelor of Science in Physical Education	19
Doctor of Education	10
Doctor of Juridical Science	1

Doctor of Medicine	91
Doctor of Philosophy	18
Juris Doctor	33
Master of Arts (College of General Studies)	158
Master of Arts (Columbian College of Arts and Sciences)	70
Master of Arts in Education	160
Master of Arts in Government	38
Master of Arts in International Affairs (College of General Studies)	255
Master of Business Administration (College of General Studies)	61
Master of Business Administration (School of Government, Business, and International Affairs)	137
Master of Comparative Law	3
Master of Comparative Law (American Practice)	1
Master of Engineering Administration	51
Master of Fine Arts	4
Master of Laws	7
Master of Science	31
Master of Science in Engineering	33
TOTAL	2,252

GEOGRAPHICAL DISTRIBUTION OF STUDENTS REGISTERED 1962–63

UNITED STATES, TERRITORIES, AND POSSESSIONS

	Fall	*Spring*		*Fall*	*Spring*
Alabama	33	34	Nebraska	19	20
Alaska	5	5	Nevada	9	8
Arizona	23	20	New Hampshire	16	16
Arkansas	27	19	New Jersey	297	295
California	209	202	New Mexico	23	27
Colorado	37	38	New York	609	605
Connecticut	93	94	North Carolina	62	68
Delaware	22	18	North Dakota	16	16
District of Columbia	2,293	2,180	Ohio	137	136
Florida	107	115	Oklahoma	33	45
Georgia	37	38	Oregon	20	16
Hawaii	18	18	Pennsylvania	402	395
Idaho	32	32	Rhode Island	31	34
Illinois	126	124	South Carolina	31	25
Indiana	47	46	South Dakota	17	19
Iowa	40	38	Tennessee	37	35
Kansas	35	34	Texas	98	94
Kentucky	25	29	Utah	58	61
Louisiana	19	14	Vermont	5	5
Maine	17	19	Virginia	2,390	2,227
Maryland	1,710	1,660	Washington	46	44
Massachusetts	146	145	West Virginia	69	66
Michigan	94	88	Wisconsin	36	41
Minnesota	36	35	Wyoming	10	10
Mississippi	10	8	Panama Canal Zone	2	2
Missouri	55	51	Puerto Rico	12	12
Montana	17	13	Virgin Islands	1	1

FOREIGN COUNTRIES

	Fall	*Spring*		*Fall*	*Spring*
Afghanistan	1	1	Austria	1	1
Argentina	8	8	Belgium	2	3
Australia	1	—	Bolivia	8	7

	Fall	Spring
Brazil	8	8
British Guiana	3	4
British West Indies	2	1
Burma	4	5
Cambodia	1	1
Canada	8	8
Chile	3	2
China	23	23
Colombia	10	9
Costa Rica	4	3
Cuba	8	11
Denmark	3	3
Dominican Republic	3	1
Dutch Guiana	1	1
Ecuador	5	6
Egypt	8	9
El Salvador	—	2
England	8	8
Finland	2	1
Formosa	2	2
France	5	9
Germany	14	19
Ghana	4	4
Greece	14	16
Guatemala	2	3
Haiti	2	2
Honduras	4	5
Hong Kong	3	3
Hungary	2	1
India	31	32
Indonesia	6	6
Iran	15	16
Iraq	11	14
Ireland	1	3
Israel	5	6
Italy	1	2
Jamaica	1	—
Japan	11	12
Jordan	5	5
Kenya	1	1
Korea	31	24
Lebanon	2	3
Liberia	7	5
Libya	1	2
Malaya	2	2
Mali	1	1
Mexico	3	4
Morocco	1	2
Nepal	1	—
Netherlands	3	4
Nicaragua	2	1
Nigeria	3	—
Norway	1	8
Pakistan	7	1
Palestine	1	1
Palau Islands	1	4
Panama	7	2
Peru	4	11
Philippine Islands	14	3
Poland	2	1
Saudi Arabia	1	2
Scotland	2	1
Singapore	1	1
South Africa	1	3
Spain	1	3
Sweden	4	3
Switzerland	1	—
Syria	1	1
Thailand	8	7
Turkey	13	7
United Arab Republic	3	1
Uruguay	2	6
Venezuela	9	10
Viet Nam	10	4
Yugoslavia	3	—
Stateless	1	

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington 6, D. C.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

1963–64

GOVERNING BOARD

President.—J. Frank Doubleday, A.M. 1955; 404 N. Kenmore Street, Arlington, Va.

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Secretary.—Helen S. Stone, A.M. 1949, Ph.D. 1954; 2124 Eye Street NW., Washington, D. C.

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John R. Busick, A.B. 1936; Director of Development, Jefferson Medical College and Center, Philadelphia, Pa.

Washington I. Cleveland, LL.B. 1923, A.B. 1926; 1712 G Street NW., Washington, D. C.

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Helen M. Dyer, M.S. 1929, Ph.D. 1935; 3024 Tilden Street NW., Washington, D. C.

Helen S. Stone, A.M. 1949, Ph.D. 1954; 2124 Eye Street NW., Washington, D. C.

School of Medicine:

Frederick Y. Donn, M.D. 1941; 800 4th Street SW., Washington, D. C.

Donald H. Leeper, Jr., M.D. 1938; 1835 Eye Street NW., Washington, D. C.

Law School:

L. Jackson Embrey, A.B. 1937, LL.B., LL.M. 1949; 1437 N. Courthouse Road, Arlington, Va.

C. Jules Rose, A.B. 1942, LL.B. 1949; 1511 K Street NW., Washington, D. C.

School of Engineering and Applied Science:

George M. Jackson, B.M.E. 1932; 4700 Connecticut Avenue NW., Washington, D. C.

Paul Kuzio, B.C.E. 1955; 3601 Van Ness Street NW., Washington, D. C.

School of Pharmacy:
F. Royce Franzoni, Jr., B.S. in Phar. 1936; 627 Pennsylvania Avenue NW., Washington, D. C.
William E. Pannill, B.S. in Phar. 1950; 2104 Marilyn Drive SE., Washington, D. C.
School of Education:
J. Dallas Shirley, B.S. in P.E. 1936, A.M. in Ed. 1945; 4409 N. Pershing Drive, Arlington, Va.
Abbie O. Smith, B.S. in P.E. 1953, A.M. in Ed. 1958; 9713 Rutley Road, Stratton Woods, Bethesda, Md.
School of Government, Business, and International Affairs:
Thaddeus A. Lindner, A.B. in Govt. 1951; 2140 Pennsylvania Avenue NW., Washington, D. C.
Donald W. Cole, M.B.A. 1957; 9928 Parkford Drive, Dallas, Texas
College of General Studies:
Reginald D. Barta, A.B. 1958; 7420 Blackford Street, Arlington, Va.
J. Frank Doubleday, A.M. 1955; 404 N. Kenmore Street, Arlington, Va.
Faculty:
George M. Koehl, A.M. 1933; 515 Mansfield Road, Silver Spring, Md.
Frederick R. Houser, A.B. 1948, A.M. in Govt. 1950; 2141 Eye Street NW., Washington, D. C.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION

The George Washington University Medical Alumni Association incorporated in 1959, continues the organization previously known as The George Washington University Medical Society. It has been affiliated with the General Alumni Association since 1926.

The stated purposes of the Association are as follows: "This shall be a nonprofit organization international in scope, whose objectives shall be to provide constructive services for the alumni of The George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of The George Washington University School of Medicine, its students, The George Washington University Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold Doctor's degrees; Doctors of Medicine who have had one or more years of postgraduate training in The George Washington University Hospital.

Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine Building at 1335 H Street NW., Washington, D. C.

1963–64

President.—William P. McKelway, M.D. 1950; 1759 Berkley Terrace NW., Washington, D. C.
President Elect.—George Speck, M.D. 1941; 2772 S. Randolph Street, Arlington, Va.
First Vice President.—Richard E. Palmer, A.B., M.D. 1944; 315 S. Lee Street, Alexandria, Va.

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Secretary.—Frank N. Miller, Jr., B.S. 1943, M.D. 1948; 5600 Overlea Road, Washington, D. C.
Treasurer.—Jerome H. Epstein, A.M. 1948, M.D. 1953; 8528 W. Howell Road, Bethesda, Md.
Executive Committee:
Frederick Y. Donn, M.D. 1941; 800 4th Street NW., Washington, D. C.
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Howard E. Ticktin, A.B. 1950, M.D. 1954; 5872 Marbury Road, Bethesda, Md.
Alfred E. Brigulio, M.D. 1936; 2025 Eye Street NW., Washington, D. C.
Edward E. Ferguson, M.D. 1936; 1712 Eye Street NW., Washington, D. C.

THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the Law School.

1962–63

President.—Joel Barlow, LL.B. 1935; Union Trust Building, Washington D. C.
First Vice President.—Samuel J. L'Hommedieu, Jr., LL.B. 1951, LL.M. 1952; 808 17th Street NW., Washington, D. C.
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Lloyd Fletcher, Jr., J.D. 1939; 4815 Maury Lane, Alexandria, Va.
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Sam Houston, LL.B. 1936 (National University); 1710 H Street NW., Washington, D. C.
Joseph D. Hughes, LL.B. 1934; 525 William Penn Place, Pittsburgh, Pa.
Thomas S. Jackson, A.B. 1933, LL.B. 1935; 1025 Connecticut Avenue NW., Washington, D. C.

George E. Monk, A.B. 1928, LL.B. 1930, LL.M. 1934; Colorado Building, Washington, D. C.
Bernard I. Nordlinger, A.B. 1929, LL.B. 1933; Southern Building, Washington, D. C.
Kenneth W. Parkinson, A.B. 1950, LL.B. 1952; Tower Building, Washington, D. C.
W. Theodore Pierson, LL.B. 1938; Ring Building, Washington, D. C.
John R. Stafford, LL.B. 1962; 847 S. Greenbrier, Arlington, Va.
Philbrick McCoy, ex officio, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles, Calif.

THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 by graduates of the Division of Library Science and became an affiliate of the General Alumni Association in 1935. It was established to foster a closer relationship between the Faculty and graduates and to further the interests of the Division of Library Science and of the University as a whole.

1962–63

President.—Betty Hill Reavis, A.B. 1933; Medical Library, St. Elizabeths Hospital, Washington, D. C.
Vice President.—Mary Louise Beitzell; 1415 Tuckerman Street NW., Washington, D. C.
Secretary.—Margaret Brown Wilson, A.B. 1933; 6620 Marlboro Pike, District Heights 28, Md.
Treasurer.—Helene Marie Gingras, A.B. 1932; 316 North Carolina Avenue SE., Washington, D. C.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering and Applied Science in closer fellowship, to promote the general welfare of the School and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

1963–64

President.—Thomas Creswell, B.S. in Eng. 1956; 2701 Philbun Drive, Adelphi, Md.
Vice President.—William Duff, B.E.E. 1959; 107 W. Masonic View Avenue, Alexandria, Va.
Secretary.—Derrill C. Rohlfs, B.E.E. 1955, M.S. in Eng. 1959; 4306 Sheldon Avenue SE., Washington, D.C.
Treasurer.—John V. Howie, B.E.E. 1961; 333 S. Glebe Road, Arlington, Va.
Delegates:
1930–39.—William Ellenberger, B.S. in E.E. 1930, B.S. in M.E. 1934; 6110 Barnaby Street, Washington, D. C.

1940–49.—Warren C. Crump, B.C.E. 1940; 4837 16th Street NE., Washington, D. C.
1950–55.—Carl P. McCall, B.E.E. 1955; 109 S. Ingram Street, Alexandria, Va.
1956–59.—Paul Robey, Jr., B.E.E. 1956; 219 Tennessee Avenue, Alexandria, Va.
1960.—Edward Cutler, B.S. in Eng. 1960; 7124 Willow Avenue NW., Washington, D. C.
1961.—Herbert S. Wilkinson II, B.E.E. 1961; 1317 Woodside Parkway, Silver Spring, Md.
1962.—Dulaney F. deButts III, B.C.E. 1962; 204 Claude Street, Annapolis, Md.

THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936, this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associate membership. The objects of the Association are to hold in unison the graduates of The George Washington University Hospital School for Nurses, to care for its sick members, and to promote the advance of nursing in the interest of The George Washington University Hospital.

1962–63

President.—Flora Schroebel; 1830 17th Street NW., Washington, D. C.
Vice President.—Ruby Gottwals; 2129 19th Street N., Arlington, Va.
Secretary.—Laura Sanders; 2707 Adams Mill Road NW., Washington, D. C.
Treasurer.—Alma W. Binks; 4821 16th Street NE., Washington, D. C.

WOMEN'S PHYSICAL EDUCATION ALUMNAE ASSOCIATION

The purpose of this organization is to foster and promote the teaching profession in the fields of Health, Physical Education, and Recreation. Its functions are (1) to attract students to the profession who show evidence of outstanding teaching capability, (2) to offer professional guidance to members in this field of work, (3) to render service to the community, (4) to render service to the University.

1962–63

President.—Audrey M. Shropshire, B.S. in P.E. 1958; 1240 N. Quantico Street, Arlington, Va.
Secretary.—Eunice S. Butkus, B.S. in P.E. 1943; 5122 3d Street NW., Washington, D. C.
Treasurer.—Nancy W. Jensen, B.S. in P.E. 1944; 6209 Rockhurst Road, Bethesda, Md.

REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association are maintained in the following places: Los Angeles, Calif.; Miami, Fla.; Chicago, Ill.; Boston, Mass.; Detroit, Mich.; Brooklyn, N. Y.; New York, N. Y.; Philadelphia, Pa.;

Pittsburgh, Pa.; Dallas, Texas; Seattle, Wash.; Northern California; New Jersey; Ohio River Valley; Utah; Hawaii; Philippine Islands; Puerto Rico.

Information about the officers and activities of these clubs may be obtained from the Alumni Office of the University.

THE LETTERMEN CLUB

The membership of this organization shall consist of those men who, for participation in a sport at The George Washington University, have been awarded varsity letters or freshman numerals, who are no longer undergraduate students of the University; and those men who, for managing a freshman or varsity sport, received letters or numerals.

The objectives of the club are to (1) bring together on a social level former letter men of all sports, (2) renew acquaintances and promote fellowship, (3) encourage higher ideals of intercollegiate athletics at the University, and (4) assist the University in matters pertaining to athletics when requested.

1962–63

President.—Joseph P. Brennan, 9923 Old Spring Road, Kensington, Md.
Vice President.—Ellis Hall, A.B. in Ed. 1943; 4810 33d Road N., Arlington, Va.
Treasurer.—Vincent J. DeAngelis, B.S. in P.E. 1938, A.M. in Ed. 1948; 3600 N. Peary, Arlington, Va.
Secretary.—James Dallas Shirley, B.S. in P.E. 1936, A.M. in Ed. 1945; 4409 N. Pershing Drive, Arlington, Va.

THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 1926 with the object of providing endowment to be used for the development of the University. Membership is limited to seniors and graduates who sign a pledge of $100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principal reaches the sum of $100,000, the Board of Administrators of the Fund may pay the University such sum as it may vote for the erection of buildings, acquisition of sites, maintenance, and purchase of equipment. At no time may money be drawn so as to leave a balance of less than $50,000 on deposit.

THE COLUMBIAN WOMEN

The objectives of this organization are (1) the promotion of acquaintanceship among its members, (2) the advancement of women by the founding of scholarships in the various departments of the University, and (3) the promotion of the interests of the University.

MEMBERSHIP

The following persons shall be eligible for active membership: (a) any woman who is currently registered or has been previously registered as a student in The George Washington University; (b) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the

Faculties, Board of Trustees, or of the administrative staff; (c) any woman recipient of an honorary degree from the University.

1963–64

President.—Mary Murray Kochka (Mrs. Joseph L.), A.B. and B.Dip. in Ed. 1918, A.M. 1931; 5629 Lamar Road NW., Washington 16, D. C.
First Vice President.—Alice Ashford Bisselle (Mrs. Hulbert T.), A.B. 1922; 1710 Surrey Lane NW., Washington 7, D. C.
Second Vice President.—Alice Tolliver (Mrs. Wayne), A.B. in Ed. 1957, A.M. in Ed. 1963; 4805 Pomponio Place, Annandale, Va.
Recording Secretary.—Tahmineh Irani Parsons (Mrs. George), B.S. 1955, A.M. 1958; 2101 Yorktown Road NW., Washington 12, D. C.
Corresponding Secretary.—Ruth A. Cammack, A.B. 1948; 3806 Davis Place NW., Washington 7, D. C.
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Assistant Treasurer.—Mary Calvo Van Story (Mrs. James C., Jr.), A.B. 1949; 3427 Porter Street NW., Washington 16, D. C.
Historian.—Sue S. Burnett, A.B. 1941; 3034 Cambridge Place NW., Washington 7, D. C.
Past President.—Margaret Davis, A.B. 1937, A.M. 1941; 1657 31st Street NW., Washington 7, D. C.

THE WOMEN'S BOARD OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The object of this organization is to aid in every way the interests and advancement of The George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, The George Washington University, Washington 6, D. C.

1963–64

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Second Vice President.—Mrs. Francis L. Kiep
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THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), Master of International Affairs (M.I.A.), and Master of Public Administration (M.P.A.)

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General Catalogue of the University ..... Director of Admissions
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School of Medicine ..... Admissions Office, School of Medicine
Summer Sessions ..... Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters ..... Registrar
Schedule of Classes: Summer Sessions ..... Dean of the Summer Sessions

THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF PHARMACY, 1906

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1960

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AIR SCIENCE, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

The George Washington University

Bulletin



SUMMARIES OF DOCTORAL DISSERTATIONS

1963

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The George Washington University

Bulletin

SUMMARIES OF DOCTORAL DISSERTATIONS 1963

VOLUME LXIII SEPTEMBER 1963 NUMBER 1

PREFATORY NOTE

This number of the UNIVERSITY BULLETIN contains summaries of the dissertations which have been accepted during 1963, in partial satisfaction of the requirements for the degrees of Doctor of Philosophy, Doctor of Juridical Science, and Doctor of Education at The George Washington University.

AVAILABILITY OF DISSERTATIONS

The dissertations in typescript form are filed in the University Library, where they may be consulted by students interested in examining the complete texts.

Information about interlibrary loans of dissertations listed in this or earlier issues may be obtained from the University Librarian.

Information about microfilm or photoprint copies of specific items may be obtained from the Photoduplication Service of the Library of Congress, Washington, D. C. 20540.

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SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

THE INFLUENCE OF ARTERIAL BARORECEPTORS ON RENAL FUNCTION

By JOSEPH PATRICK GILMORE*

During experiments undertaken to produce acute increases in blood pressure in the dog by stimulation of the left stellate ganglion, a striking increase in urine flow was observed. An investigation was therefore made to determine the mechanism of the observed diuresis. The results obtained suggested that the diuresis was mediated by a reflex involving the arterial baroreceptors which brought about a decrease in renal efferent nerve activity. To investigate further the influence of the arterial baroreceptors on renal function, experiments were done in which the stimulus to the carotid sinus baroreceptors was decreased by occlusion of the carotid arteries. In the initial experiments, renal blood flow, glomerular filtration rate, and water and electrolyte excretion did not show consistent changes during carotid occlusion. A perfused kidney preparation was therefore developed in which renal blood flow could be measured and controlled. With this preparation, it was observed that large and consistent increases in renal vascular resistance were produced when the carotid arteries were occluded.

The results of the experiments presented in this dissertation show:

1. Electrical stimulation of the left stellate ganglion of the dog is associated with an increase in urine flow, in electrolyte and total solute excretion, and in the renal clearance of inulin. These changes appear rapidly, are well maintained during prolonged stimulation, and stop soon after stimulation has ceased.

2. The hemodynamic responses associated with these changes are an increase in arterial pulse pressure, an increase or no change in mean arterial blood pressure, and a decline in mean left atrial pressure.

3. The diuretic response to stellate ganglion stimulation is diminished, but not abolished, by bilateral cervical vagotomy as are the changes in electrolyte excretion, total solute excretion, and the renal clearance of inulin. However, the hemodynamic responses are not greatly modified by cervical vagotomy. Vagotomy just above the diaphragm does not appear to modify these responses.

4. The effect of vagotomy on the renal responses to stellate stimulation appears to be a result of sectioning baroreceptor afferent nerves which traverse the vagus nerves.

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5. The rapidity of the renal response to stellate stimulation, its temporal relation to the hemodynamic changes, and the effect of vagotomy indicate that the diuresis is, to a large degree, secondary to withdrawal of renal sympathetic vasoconstrictor nerve discharge.

6. The similarities between the renal responses to stellate stimulation and to intravenous infusions indicate that infusion diuresis may be mediated, at least in part, by the same mechanism.

7. When renal blood flow is measured directly in the perfused kidney, carotid occlusion is associated with little change or with a decrease in renal blood flow at a time when renal arterial pressure increases. When renal blood flow is maintained constant in the perfused kidney, carotid occlusion is associated with an increase in renal perfusion pressure. Therefore, it is clear that carotid occlusion produces an increase in renal vascular resistance. The intrarenal administration of the adrenergic blocking agent, phenoxybenzamine, can prevent the increase in renal vascular resistance during carotid occlusion, indicating that it is due to an adrenergic mechanism. The renal pressure-flow curve is displaced down and to the right during carotid occlusion; autoregulation of renal blood flow is still observed, although at a lower level of blood flow. All these changes indicate that the primary renal response to carotid occlusion is vasoconstriction mediated by the renal sympathetic nerves.

8. It is well known that urine flow increases when renal arterial pressure is increased independent of a change in the activity of the renal vasoconstrictor nerves and independent of a change in renal blood flow. Consequently, the rise in arterial pressure associated with carotid occlusion can contribute directly to the response of the kidney to carotid occlusion. The variability of the changes in water and electrolyte excretion by the kidney during carotid occlusion may represent a varying contribution of direct and reflex mechanism to the total response.

The combined results of the stellate ganglion stimulation and carotid occlusion experiments show that arterial baroreceptor influences represent an important mechanism whereby body water and electrolyte homeostasis is achieved. Furthermore, this influence appears to function in a manner complementary to mechanisms which are believed to modify the secretion of the antidiuretic hormone and aldosterone.

THE RELATIONSHIP OF AUTHORITARIAN SUBMISSIVENESS TO RESPONSE TO THERAPY IN ANXIETY NEUROSIS

by ELIZABETH KATZ HACKETT*

There has been a great deal of research done on the most recent additions to the armamentarium of psychiatry, the psychoactive drugs. In clinical research studies on these drugs, a common finding has been that patients given placebos as well as those given actual drugs have evidenced improvement. Changes resulting from administration of a placebo have been termed the placebo effect. The placebo effect is present in response to psychoactive drugs, but since it also appears in the absence of these drugs it must be assumed to be derived from social and personality factors. A social factor related to therapeutic response is the expectation a patient has concerning his treatment. Experiments have demonstrated that expectations can be manipulated by the use of verbal instructions. In a clinical situation the most direct manipulation of a patient's therapeutic expectations can be effected through a doctor's verbalizations concerning the treatment being administered. Since the doctor-patient relationship is, in essence, an authoritarian one, submission to authority in terms of unquestioning acceptance of a doctor's statements is a relevant and discriminating dimension of a patient's personality.

The study had a general hypothesis that the degree of authoritarian submissiveness in a patient's personality is directly related to the importance he attaches to his doctor's drug-related statements and the degree to which these verbalizations form the basis for his own expectations concerning drug-related improvement.

The patients in the study had been clinically diagnosed anxiety neurotics who had undergone six weeks of treatment at one of three outpatient clinics. One dimension of the experimental conditions of treatment had involved administration of either meprobamate or placebo, both given under double-blind conditions. The other dimension was that of "set" or expectation concerning the therapeutic efficacy of the medication. Sets had been established by doctors' statements expressing specific opinions about the administered medication. One set had been designated "T" and entailed the physician's maintaining a consistently positive attitude toward the medication; the other set, designated "E", had entailed the physician's maintaining a skeptical and evaluative attitude toward the medication. The ex-

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perimental conditions of the study were the four possible combinations of medications and sets. The patients had been randomly assigned to the conditions.

Before the study had begun, each doctor had selected the physician's set-establishing behavior he preferred and had then been trained in this role which he assumed throughout the study. No doctor saw an experimental patient until he had satisfied his supervisors and trainers that he had mastered his role and could be expected to cope with any contingency in his relationships with patients within the boundaries of the role.

Specific clinical criteria had limited the selection of patients for the study so as to obtain an essentially homogeneous population within and between the clinics. The patient population had been relatively young, fairly well-educated, and in general new to psychiatric treatment.

Identical clinic procedures had been used at the three hospitals. Hence, all patients in the study had undergone the same succession of intake interviews, regular administrations of subjective evaluation forms, four bi-weekly treatment interviews, and final disposition based on therapeutic outcome.

Because the general hypothesis of the study referred to authoritarian submissiveness, it was necessary to identify the concept in terms both of its relationship to other theoretical concepts and of the instrument used to measure it.

Authoritarian submissiveness was defined specifically as a predisposition to be persuaded by authority figures. A review of studies relating the F Scale to studies of persuasibility and to studies of acquiescent response set provided background for the construction of the measure of authoritarian submissiveness, the A/S Scale of Submissiveness. Clinical considerations required that the scale be administered at the termination of the experimental treatment, hence after it had been ascertained that A/S Scale scores obtained from the patients in the study had a normal distribution, an unbiased analysis of variance was done on the obtained scores. Since no difference was found between the scores of subjects in different experimental conditions, and since it was assumed that random distribution of patients to the experimental conditions had been reflected in random distribution of A/S scores, it was concluded that experimental treatments had not affected the obtained A/S scores.

The A/S Scale was considered to be a valid measurement of the hypothesized personality variable sought in this investigation, thus the specific hypotheses of the investigation were:

1. Under conditions of the "T" set, regardless of medication received, patients who obtain high scores on the A/S Scale will evidence a greater degree of improvement than will patients who obtain low scores on the scale.

2. Under conditions of the "E" set, regardless of medication received, patients who obtain low scores on the A/S Scale will evidence a greater degree of improvement than will patients who obtain high scores on the scale.

Three scores were used to measure improvement: a Target Symptom score, derived from a sixty-four item Symptom Check List; an Anxiety score, derived from a sixty-seven item Adjective Check List; and a Global Rating score, referring to amount of improvement experienced by the patient since beginning treatment.

which was obtained directly. By its nature the Global Rating score was a post-treatment measure and was therefore obtained after two, after four, and after six weeks of treatment. Both the Target Symptom score and the Anxiety score had pretreatment ratings made by the patient at treatment visit I before he saw his study doctor for the first time as well as ratings made after two, four, and six weeks of treatment. This made it possible to obtain for these two measures scores based on adjusted means derived from analyses of covariance.

Since every patient had three concomitant improvement scores for each post-treatment period, it appeared that a multivariate discriminatory analysis, specifically that of the discriminant function, would best differentiate between patients with high and patients with low A/S Scale scores. However, additional *t*-tests individually compared the improvement scores contributing to the discriminant function.

Each set condition was treated separately in the statistical analyses of the results. Because the normal distribution of A/S Scale scores for the total patient population was reflected within each set, scores considered "high" and scores considered "low" were not based on a median split; the upper third of the distribution of scores was judged "high" and the lower third of the distribution was judged "low."

In respect to patients treated under T set conditions, when, for each time period, the three improvement scores had been combined to obtain discriminant functions, a statistically significant difference in the predicted direction was found between patients "high" in authoritarian submissiveness and patients "low" in authoritarian submissiveness only after four weeks of treatment. Inspection of the contributions to the discriminant function revealed that the three improvement measures had contributed inconsistently to the obtained results. Comparisons were made between the scores of "high" and "low" authoritarian submissive patients for each of the three improvement measures at each of the three time periods. At all times, statistically significant differences between the two groups were demonstrated by the *t*-tests of Anxiety deviation scores. All differences were in the predicted direction. Graphs were used to illustrate the relationships of the mean scores of the "high" and the "low" authoritarian submissive patient groups over time. The means of the Global Rating scores obtained after two, four, and six weeks of treatment showed that both "high" and "low" patient groups exhibited essentially the same degree of improvement. The Anxiety deviation from regression scores of the two patient groups was consistently different, the "high" submissive patients always demonstrating more improvement and the "low" submissive patients always demonstrating less improvement than predicted by the line of regression. The Target Symptom deviation from regression scores also showed a consistent differentiation between the two patient groups, and again the "high" submissive patients improved more, while the "low" submissive patients improved less, than predicted by the line of regression. In contradistinction to the Global Rating scores, for which there was no consistent point from which change was measured, the two improvement measures for which a pre-score served as an anchor point from which were measured changes resulting from experimental treatments differentiated consistently between the two patient groups. The differences were uniformly in the predicted direction, hence the results obtained in the

latter measures, particularly those found in the Anxiety deviation scores, supported the conclusion that the T Set condition hypothesis has been proven.

In respect to patients treated under E Set conditions, combining the three improvement scores to obtain discriminant functions resulted in finding no significant differences between patients "high" in authoritarian submissiveness and patients "low" in authoritarian submissiveness after two, four, or six weeks of treatment. As had been found in T Set, the measures of improvement had contributed inconsistently to the E Set discriminant functions. In the comparison of "high" and "low" submissive patients, experimentally valid *t*-tests were limited to Global Rating scores after four and six weeks of treatment as these were the scores in which the group means differed in the predicted direction. None of the *t*-tests demonstrated statistical significance. The graphs illustrating the relationships of the mean scores of the "high" and "low" authoritarian submissive patient groups over time showed the instability of this measure, for the relative positions of the two groups reversed themselves during the course of treatment. The graph of Anxiety deviation from regression scores demonstrated how clearly this measure differentiated between the groups, always in the direction opposite to that of the hypothesis: the "high" authoritarian submissive patients consistently improved more while the "low" authoritarian submissive patients consistently improved less than predicted by the line of regression. The graph of Target Symptom deviation from regression scores showed that on this measure the two patient groups were almost identical after two weeks of treatment, but after four and six weeks of treatment the "high" submissive patients manifested more improvement than did the "low" submissive patients. In this case, the scores of the "high" submissive patients were almost identical with scores predicted by the line of regression. Since none of the discriminant functions and none of the *t*-tests showed statistical significance, and in view of the graphic demonstration that differences in improvement scores tended to be in the direction opposite to the prediction, it had to be concluded that the E Set hypothesis had not been proven. In fact, the results imply a contrary hypothesis predicting greater improvement in patients with high scores on the A/S Scale than in patients with low scores on the A/S Scale.

Discussion of the results of the investigation cautioned that although the findings might have widespread relevance in psychology and psychiatry, immediately useful generalizations could be made only for a similar clinical outpatient group undergoing similar pharmacotherapy. The meaningfulness of the improvement scores was evaluated and findings which were not validly testable within the confines of the experiment were considered. The E Set results, in particular, were considered to indicate that anxiety neurotic patients who are "high" in authoritarian submissiveness manifest more improvement than do anxiety neurotic patients who are "low" in authoritarian submissiveness. Another comparison, not within the purview of the experiment, was that of manifested improvement of "high" submissive patients under T Set conditions compared with manifested improvement of "high" submissive patients under E Set conditions. By comparing the graphs of Anxiety deviation scores and Target Symptom deviation scores, it is apparent that these patients consistently, though perhaps not statistically significantly, improve

more under T Set than under E Set conditions. A similar comparison between set conditions for patients who were "low" in authoritarian submissiveness demonstrated no consistent difference in favor of either set condition.

The implications of all the findings were related to clinical practice, wherein "high" authoritarian submissive patients may respond so positively to the doctor-patient relationship per se that their rapid symptom alleviation may preclude intensive therapy. The results when related to research indicated a fruitful direction for experiments concerned with persuasibility; the "high" submissive patients seemed to be responsive not to an individual authority figure but rather to a more general type of authority stemming from socially structured expectations. Note was taken that among the patients treated under experimental conditions the impressive improvement noted by "high" authoritarian submissive patients was due about as often to the administration of a placebo as to the administration of an active medication. Obviously, this response is a reflection of a strong placebo response in these patients. It was suggested that the A/S Scale which defined the "high" submissive patients might also serve as a device for screening some placebo-reacting patients from studies attempting to evaluate drug efficacy, since the fewer the placebo reactors the greater the purity of the measure of drug action. A theoretical relationship between authoritarian submissiveness and unfilled dependency needs was postulated on the basis of the marked reduction in anxiety shown by "high" submissive patients; some of this anxiety could well be the result of the threatening aspect of dependency needs, and the dependency of the patient upon his doctor is a socially acceptable, non-threatening way of filling this need.

COORDINATION POLYMERS OF BIS(8-HYDROXYQUINOLINE) DERIVATIVES

by EMANUEL HOROWITZ*

This dissertation describes a detailed study of the coordination polymers of bis-(8-hydroxyquinoline) derivatives. The initial phase of the investigation involved the synthesis of a number of 5-substituted 8-hydroxyquinolines, including the 5-amino, 5-formyl, and 5-hydroxy compounds. Three bis-bidentate derivatives of 8-hydroxy-

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quinoline were then prepared which were capable of combining with metal ions to form coordination polymers. Each of the derivatives had a different bridging group linking two oxine molecules through the 5,5′-positions. Bis(8-hydroxy-5-quinolyl)-methane was prepared by reacting 8-hydroxyquinoline with formaldehyde in concentrated sulfuric acid at low temperature. An entirely new compound, 5,5′-[p-phenylenebis(methylidyenenitrilo)] di-8-quinolinol, was obtained by condensing 5-aminooxine with terephthalaldehyde. Another Schiff base not previously reported, 5,5′-[methylenebis(p-phenylenenitrilomethylidyne)] di-8-quinolinol, was prepared in a condensation reaction between 5-formyl oxine and 4,4′-methylenedianiline. Coordination polymers of the Schiff bases of Co(II), Ni(II), Cu(II), and Zn(II) were prepared by reacting the divalent transition metal ions and the ligands in boiling dimethylformamide. The bis(8-hydroxy-5-quinolyl)methane ligand was reacted with 14 different metal ions to obtain a wide variety of coordination polymers. These polymers were formed in solution, using hot dimethylformamide, and in thermal polymerization reactions in vacuum in the absence of solvent. Results of the chemical analyses on all the products prepared in connection with this dissertation are given.

Infrared spectra of the ligands and the coordination polymers, most of which are not available in the literature, are presented, accompanied by a detailed discussion of the results. For the Mn(II), Co(II), Ni(II), Cu(II), and Zn(II) coordination polymers of bis(8-hydroxy-5-quinolyl)methane, the dependence of the C—O vibration frequency in the 1090 cm^{-1} region on the atomic number of the central metal is demonstrated. The thermal stability of these five coordination polymers and the Ni(II) polymers of the two Schiff bases were studied in vacuum by thermogravimetric analysis. Data are reported which relates the decomposition temperature of the polymer to the atomic number of the central metal in the coordination polymers. The characteristics and properties of the coordination polymers are discussed in the light of current chemical theory.

HEPATIC GLUTATHIONE-INSULIN TRANSHYDROGENASE

by HOWARD MARVIN KATZEN*

It has been known for a long time that mammalian liver contains an enzyme or enzymes capable of inactivating and degrading insulin. In 1959, Tomizawa and Halsey reported the isolation from beef liver of a highly purified enzyme which could degrade I^{131}-labeled-iodinated insulin in the presence of reduced glutathione. The assay system they used was based upon the ability of this enzyme to render the radioactive products of insulin-I^{131} soluble in 5 per cent trichloroacetic acid. By following, with some modifications, their procedure, a protein of comparable homogeneity has been secured. Enzyme activity was coincident with a single protein peak on starch block electrophoresis and elution of this peak from the starch block yielded a product homogeneous in the ultracentrifuge and on paper electrophoresis.

In the present studies on the I^{131}-solubilizing property of the insulin-degrading enzyme, it has been found that either reduced glutathione or cysteine are absolutely required in the reaction. When measurements were made of radioactivity solubilized in trichloroacetic acid solution during degradation of insulin-I^{131}, it was found that the same degree of solubilization of products of insulin-I^{131} could be achieved with or without enzyme by raising the concentration of reduced glutathione in the incubation medium from 2 to 20 μmoles per 2 ml. Therefore it appeared that the enzyme was greatly accelerating the rate of a reaction that could be carried out by reduced glutathione even in the absence of added enzyme.

During the course of these experiments, it was noted that of the total amount of radioactivity present in the incubation media, a maximum of 15 per cent of this I^{131} could be solubilized in trichloroacetic acid solution. This 15 per cent maximum limit could not be exceeded by subsequent additions of more enzyme or reduced glutathione to the incubation media. This limit has been attributed to the limited solubility of the products of insulin reduction. The insolubility of reduced insulin was observed in two types of media: 5 per cent trichloroacetic acid and pH 7.5 phosphate buffer used in these experiments. Fluorodinitrophenyl-end group analyses of the enzymatically produced trichloroacetic acid soluble products revealed only glycine as the N-terminal amino acid present, while similar analyses of the pH 7.5 insoluble enzymatic products of insulin degradation insoluble at pH 7.5 showed only phenyl-

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alanine as the N-terminal amino acid during early stages of precipitation. Clearly the glycyl and phenylalanyl chains of insulin were separated during the course of enzymatic digestion of insulin. These findings are in accord with the observations of Tomizawa that the glycyl chain is the more soluble, the phenylalanyl chain the less soluble fragment of insulin reductive cleavage.

The liberation of no other end groups could be detected in these studies.

In other experiments, designed to explore the possible occurrence of proteolysis, ninhydrin reactive material was measured in incubation media containing a mixture of the oxidized A and B chains of insulin as the substrate for the enzyme. Such mixtures have been reported to be more susceptible to proteolysis than native insulin. Over a period of 2 hours, no increase in ninhydrin chromogen could be detected.

These as well as other findings all suggested a hydrogen transferase activity for the enzyme under study, wherein reduced glutathione served as hydrogen donor and the disulfide bonds of insulin were reductively cleaved. We have proposed the name glutathione-insulin transhydrogenase for this enzyme. In order to study this reaction, a spectrophotometric assay was developed whereby the transhydrogenase reaction was coupled to the reaction due to glutathione reductase. Transhydrogenase activity was determined by measurement of the oxidation of TPNH (at 340 mμ) by oxidized glutathione which is generated in the transhydrogenase reaction during the reduction of disulfide-containing substrate by GSH. In studies of this type, it was shown that the addition of transhydrogenase to the incubation media resulted in a rapid decline in the optical density corresponding to a rapid oxidation of TPNH. When enzyme was initially present in the incubation media, the final addition of insulin caused a very rapid oxidation of TPNH. Even in the absence of transhydrogenase, a significant rate of oxidation of TPNH occurred. This was referred to as the basal rate of TPNH oxidation and had to be subtracted from the over-all rate of TPNH oxidation so as to yield the rate of enzymatic oxidation only.

In a study of the effects of elimination of each of the components in the coupled reaction, GSH, insulin, transhydrogenase, glutathione reductase, and TPNH were shown to be absolutely required for the maximum rate. It was shown clearly, also, that a turbidity developed in this system at pH 7.5 which was referable to the interaction of insulin with sulfhydryl reducing agents, and its rate of appearance was far more rapid in the presence than in the absence of transhydrogenase. This turbidity did not interfere with measurements of initial rates of TPNH oxidation, however.

In a study of the dependence of the initial rate of TPNH oxidation upon the concentration of transhydrogenase, a linear relationship was obtained. Other studies were carried out on the kinetics of the reaction. Here it was shown that insulin has a K_m of 4.3×10^{-6} M which may be contrasted with estimates of insulin concentration in portal blood of 10^{-10} to 10^{-9} molar. In an analogous kinetic study of reduced glutathione, a K_m of 8.9×10^{-4} M was secured. This value compares very favorably with reported concentrations of GSH in liver of 4.6×10^{-3} molar.

Substrate specificity studies were carried out, and it was found that vasopressin and oxytocin were among the disulfide compounds that could replace insulin in this hydrogen transfer reaction. A preparation of bovine plasma albumin was also found

to act as a substrate, although at a much slower rate than insulin, while homocystine, cystine, lipoic acid, and ribonuclease did not react. Although apparently similar in reactivity, the present enzyme is thus demonstrably different in its substrate spectrum from the GSH-homocystine transhydrogenase studied by Racker and from the yeast transhydrogenase of Thompson, Black, and Hudson for which L-cystine, lipoate, and homocystine are substrates.

Because the phenylalanyl and glycyl chains proved to be separable during enzymatic reduction, it is quite clear that both of the interchain disulfide bridges of insulin are cleaved. Furthermore, the fact that both vasopressin and oxytocin serve as substrates for reduction suggests, by analogy, that the cyclic disulfide bond in the glycyl chain of insulin is also susceptible to cleavage. In order to confirm these findings and their conclusions, the stoichiometry of the reaction was investigated. By using the previously described spectrophotometric assay procedure and centrifuging the turbidity so that it would not interfere with optical density readings, it was shown that 0.107 μmoles of insulin were oxidized per 0.120 μmoles of disulfide bonds of insulin reacted. This is equivalent to 2.7 disulfide bonds split per mole of insulin reduced. Therefore, all three disulfide bonds of insulin are susceptible to reduction during the course of enzymatic reaction with transhydrogenase.

Other studies were carried out to determine the reversibility of the transhydrogenase reaction. For this purpose, measurement was made of the amount of insulin-like activity present after reoxidation (in the presence of oxidized glutathione and transhydrogenase) of the physiologically inactive products of insulin reduction. Two methods of assay, utilizing two parameters completely independent of each other, were employed: the adipose tissue assay of Martin and co-workers and the immunological method of Berson and Yalow. Approximately 20 times as much insulin-like activity was recovered when transhydrogenase was present in the regeneration procedure as in its absence, when assayed by the effect on glucose metabolism in adipose tissue. A quantitative evaluation of the amount of insulin-like material regenerated indicated that 32 per cent of the original activity was recovered in the presence of enzyme as opposed to 1.7 per cent in the absence of enzyme. Approximately 5 times as much immunologic activity corresponding to insulin was recovered when enzyme was present. It is inferred that the presence of glutathione-insulin transhydrogenase favors the reconstitution of the naturally-occurring disulfide bonds of insulin.

In considering the possible role this enzyme might play in regulating the metabolism of insulin, the finding of Langdon that the phenylalanyl chain of insulin inhibits mammalian glutathione-reductase is of interest. Thus one of the products of the reaction between insulin and reduced glutathione could inhibit the regeneration of GSH. This mechanism could then serve to limit the reduction of insulin in the cell by negative feedback. Another regulation of insulin destruction might exist insofar as TPNH arises chiefly from the oxidation of glucose-6-phosphate, a process which, in certain tissues, is insulin dependent. Thus a deficiency of insulin might result in decreased availability of TPNH, hence decreased degradation of insulin. Conversely, insulin excess, leading to increased TPNH levels, would favor insulin destruction.

Since the preponderance of evidence suggests that reduced insulin is physiologically inactive, this enzyme could act to inactivate as well as degrade insulin. It has been shown by Sanger and by Kenny that both reduced and oxidized insulin are more susceptible to proteolysis than intact native insulin. The enzyme here under study might be thus involved in the first step in the over-all catabolism of insulin in the liver.

Further discussions are presented in this dissertation to account for the observed difference between the immunologic and physiologic response to the regenerated insulin-like material. It is suggested that the enzyme is only capable of resynthesizing the correct disulfide bonds necessary for physiological activity, not the naturally-occurring tertiary structure.

The finding of an enzyme capable of synthesizing, from randomly distributed sulfhydryl-containing polypeptide molecules, the correct disulfide bonds necessary for biological activity would suggest that hydrogen transferring enzymes of the type currently under study might be involved in the biosynthesis of protein disulfide linkages.

A COMPARISON OF PHYSICALLY ASSAULTIVE PRISONER MENTAL PATIENTS AND NORMAL CONTROLS WITH RESPECT TO IDEAL-ACTUAL AND SELF-OTHER SEMANTIC DISTANCES

by CHRIST WILLIAM KYRIAZIS*

The main purpose of this investigation was to see if physically assaultive prisoner mental patients differ from normals in their semantic distances between their actual and ideal concepts of the self and significant others as well as between their concepts of the self and each of the concepts of these significant persons in their lives.

A set of five hypotheses based on frustration and identification theory were formulated and stated in terms of the measuring instrument as follows. In comparison to normals, physically assaultive male prisoner mental patients would show: (1) a greater distance between their ideal and actual self concepts—implying greater

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personal frustration or dissatisfaction with themselves; (2) a greater distance between their ideal and actual concepts of important socializing agents—implying greater frustration imposed by socializing agents; (3) smaller actual self concept scores on factors having favorable connotations—implying less satisfactory meaning for their actual self concepts and reflecting little self-respect; (4) smaller actual concept scores of significant others on factors having favorable connotations—implying less satisfactory meaning for their actual concepts of significant others and reflecting little respect for others; and (5) a greater distance between the self concept and each concept of significant others—implying less identification with others.

The measuring instrument was a Semantic Differential consisting of 20 scales defined by bipolar adjectives, e.g., "fair-unfair," "strong-weak," which was administered individually by the same examiner to a group of 35 physically assaultive male prisoner mental patients charged with assault, murder, or rape who met the following criteria: between 18 and 55 years of age; in good contact; no evidence of central nervous system disorders and physically in good health; and an IQ of 80 or better, able to read and understand the test, and willing to cooperate. The normal control group consisted of 35 male subjects drawn on a voluntary basis from hospital employees and other employed residents of the Washington area with no history of difficulty with the law or mental disorder, matched in age, IQ, education level, etc.

The subjects' ratings of their ideal and actual concepts of the *Self, Mother, Father, Family, Teacher, Boss, Cop, Woman, Man, People,* as well as *Satan* and *Angel,* were secured on two separate occasions two weeks apart, and were analyzed for test-retest reliability and factor composition prior to testing concept differences between the groups. The data of both groups were found to be reliable and were factor analyzed by the principal axis method yielding three factors as follows: (1) the commonly found *evaluative* factor, represented by such scales as "fair-unfair," "kind-cruel;" (2) a *dynamism* factor represented by "strong-weak," "active-passive;" and (3) a new factor found in this study named the *austerity* factor, represented by the scales "soft-hard" and "easy going-strict."

Concept comparisons within and between groups with respect to semantic distances as well as factor scores yielded the following findings which generally support the aforementioned hypotheses:

1. The semantic distances between the ideal and actual concepts of the *Self* and between the ideal and actual concepts of significant others of prisoner patients were significantly greater than those of normals in all instances except *Boss* and *Mother* in which they tended to be greater than those of normals, but did not reach significance level.

Ranked in decreasing order, the prisoner patients' semantic distances show a "stair-step" effect as follows: *People, Cop,* and *Father; Man, Family,* and *Woman; Boss, Self, Mother,* and *Teacher.*

In contrast, the distances of the normals show little variability among themselves and tend to be smaller than the smallest of the prisoner patients. Ranked in decreasing order of distance the concepts are as follows: *Cop, Father, Woman, People, Man, Mother, Family, Self, Boss,* and *Teacher.*

2. The prisoner patients' ideal concepts generally show very high *evaluative* and

dynamism factor scores. However, they show moderate *austerity* factor scores, i.e., in the slightly "soft" range as in the case of *Teacher, Family, Self, People,* and *Mother,* and quite "soft" in *Ideal Woman;* neutral as in *Father, Boss,* and *Man;* or slightly "hard" as in *Ideal Cop.*

The normals' ideal concepts, likewise, show high positive *evaluative* and *dynamism* factor scores and moderate *austerity* factor scores.

No significant differences were found between the groups except in *Ideal Mother,* whom prisoner patients would like to be slightly "soft," while normals neither "soft" nor "hard;" *Ideal Father,* whom prisoner patients would like to be "fairer" than normals; in *Ideal Teacher,* whom both would like to be very "fair," prisoner patients would like him "fairer" than normals but slightly "soft," while normals would like him to be slightly "hard;" and in *Ideal Woman,* whom both would like to be quite "strong," prisoner patients would like her to be less "strong" than normals.

3. The prisoner patients' actual concepts generally show moderate to quite high *evaluative* and *dynamism* factor scores except for *People* and *Cop* which were rated as slightly "unfair". Also they generally show moderate *austerity* factor scores as in *Mother* and *Self* who are perceived as slightly "soft" (though *Woman* is perceived as quite "soft"); while *Man, Boss, People, Teacher, Father, Family,* as slightly "hard" (though *Cop,* quite "hard").

The actual concepts of normals generally show quite high *evaluative* and *dynamism* factor scores, forming a pattern almost one scale unit above the prisoner patients' scores. With respect to the *austerity* factor scores, the actual concepts of normals are generally similar to those of prisoner patients, extending along the slightly "soft" range, as in *Family, Self,* and *People,* though in the quite "soft" range in *Mother* and *Women;* and along the slightly "hard" range as in *Teacher, Boss, Father,* and *Man,* though in the quite "hard" range in *Cop.*

The prisoner patients' actual concepts generally differ from those of normals, showing significantly smaller *evaluative* and *dynamism* factor scores—except in *Self* which is not perceived as significantly less "strong," and in *Teacher* and *Mother* who are not seen either as significantly less "fair" or "strong". With respect to the *austerity* factor scores, there were no significant differences between the groups, except in the concept of *Family* which was rated as slightly "hard" by prisoner patients while slightly "soft" by normals.

4. Prisoner patients generally tend to show greater semantic distances (less semantic similarity) than normals between their *Self* concept and each of the concepts of significant others—the greatest being the distances from *Self* to *People* and *Woman,* which were statistically significant.

Within the prisoner patient group relatively smaller semantic distances were found between the *Self* concept and each of the concepts of *Family, Teacher, Man, Father, Boss,* and *Mother;* while greater distances between the *Self* concept and those of *Woman, People, Cop, Angel,* and *Satan.*

Within the normal control group smaller semantic distances were found between the *Self* concept and each of the concepts of *Teacher, People, Family, Man, Father, Boss, Mother,* and *Woman;* while greater distances between the *Self* concept and that of *Angel, Cop,* and *Satan;* however the distance between the *Self* concept and the

more distant concepts in normals (except *Cop* and *Satan*) was considerably smaller than the smallest distance between the *Self* and the closest concept, *Family*, of the prisoner patients.

Despite the differences in semantic distance, however, the over-all picture shows that prisoner patients, and more so, normals, generally tend to cluster their actual concepts relatively close around their *Self* concepts, forming two separate constellations.

5. Significant differences were found between prisoner patients and normals with respect to scale-checking style, indicating that prisoner patients use more frequently the extreme scale positions ($p < .044$), but less frequently the intermediate positions ($p < .019$) than normals.

6. Also, a significant difference was found between prisoner patients and normals with respect to total time taken to complete the rating of the concepts on the first occasion, ($p < .007$), indicating that the prisoner patients were slower than the normals.

CONCLUSIONS

These findings were interpreted as indicating that:

1. A positive relationship appears to exist between physically assaultive behavior and inferred experienced frustration of emotional needs due to personal inadequacy, or to severe or erratic discipline imposed by parents or other significant persons serving as socializing agents.

Variations in degree of personal frustration and frustrations imposed by various socializers probably condition corresponding attitudes toward the frustrators (socializers), and thus contribute to the formation of a pattern of attitudes and feelings characteristic of physically assaultive persons.

2. The ideal concepts of the self and of significant persons appear to be culturally conditioned in the socialized individual on a stereotypy basis. It is possible, however, that differences in experience with the real socializers may influence at least slightly one's ideal concept—though this may be at least in part the result of some individuals' tendency to rate ideal concepts consistently in an exaggerated fashion.

3. An inverse relation appears to exist between physically assaultive behavior and feelings and attitudes toward the self and other socializing agents, so that the less favorable the feelings and attitudes are, the higher the likelihood of occurrence of physically aggressive behavior will be.

4. An inverse relationship appears to exist between physically assaultive behavior and inferred identification, so that the less the inferred identification between the individual and his socializers is, the higher the likelihood of occurrence of aggressive behavior against them will be.

5. An over-all relationship appears to exist between feelings and attitudes toward the self and toward others, so that one tends to ascribe to others qualities similar to those he ascribes to himself, i.e., tends to perceive others the way he perceives himself.

STUDIES ON THE METABOLISM AND MECHANISM OF ACTION OF 1-AMINOCYCLOPENTANE-1-CARBOXYLIC ACID

by WILLIAM ROBERT STERLING*

The α-amino acid, 1-aminocyclopentane-1-carboxylic acid (ACC), was the first new type of carcinostatic agent uncovered by the screening program of the Cancer Chemotherapy National Service Center of the National Cancer Institute. ACC had been found to prolong the survival time of animals bearing several types of transplanted tumors, but the efficacy of the drug in human cancer chemotherapy appeared to be doubtful. Although the chemical structure of ACC would suggest that the compound might act as an amino-acid analog, the action of the compound was unknown. The research reported here was undertaken to determine the physiological disposition and the mechanism of action of ACC.

In order to facilitate subsequent experiments, radioactive ACC(ACC-C^{14}) was synthesized with C^{14} in the carboxyl group. This was accomplished utilizing radioactive potassium cyanide by first synthesizing the principal intermediate, spiro-(cyclopentane-1:5-hydantoin), which was subsequently hydrolyzed to the amino acid by alkaline hydrolysis. The amino acid had a radiopurity of over 98 per cent as determined by paper chromatography in several solvent systems and by radiochromatographic analysis.

The distribution, excretion, and metabolism of ACC was determined in C3H mice following the intraperitoneal injection of 30 mg per kg of the radioactive compound. An unusual degree of persistence of ACC in these animals was noted. Near-maximum blood levels of ACC were attained within one hour and remained constant at approximately 35 μg per ml for at least four days. ACC was taken up by all tissues studied, namely liver, intestine, spleen, kidney, lung, heart, muscle, and brain, and by 24 hours a reached similar concentration on a wet weight basis in each. ACC was maintained in these tissues at relatively constant levels for at least 6 days. The rate of excretion of ACC was correlated with the maintenance of these tissue levels. Expired air contained an insignificant amount of $C^{14}O_2$ which indicated that ACC was not decarboxylated *in vivo*. ACC was excreted into the urine at a slow and constant rate of 1.2 per cent of the administered dose per day which suggested an efficient kidney tubule reabsorption. Fecal excretion was the main route for the slow elimination of ACC since by 4 days the feces contained approximately 25 per cent of the administered dose.

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Further analyses revealed that ACC was not metabolized *in vivo*. The tissues were extracted in perchloric acid and proteins were isolated. It was demonstrated that at least 98 per cent of the ACC in each tissue was extracted into the cold perchloric acid-soluble fraction and the amount of incorporation into protein never exceeded 0.006 μg per mg, which indicated that the compound was not incorporated into the macromolecules of the cells. Radiochromatographic analysis of the cold perchloric acid-soluble fraction of the tissues, and of urine and sera, did not reveal any compound other than ACC. In addition, 6C3HED ascites lymphosarcoma cells removed from mice previously administered ACC contained the compound in the cold perchloric acid fraction in nonmetabolized form.

Evidence was presented which indicated that the persistence of ACC in mice was not due to strong binding to plasma proteins or cellular macromolecules. This conclusion was based on the finding that ACC accumulated in ascites tumor cells transplanted into mice a week after drug administration, on the absence of binding of ACC to bovine serum albumin *in vitro*, and on some transport characteristics of ACC in ascites tumor cells *in vitro*.

The demonstration of the lack of metabolism and the persistence of ACC in animals has several implications concerning the pharmacology and use of this compound. The results have shown that the carcinostatic acivity was due to unmodified ACC and not to any anabolite or catabolite of the agent. Because the unusual physiological disposition of ACC was not known to clinical investigators, the possibility exists that the drug was administered in a suboptimal dosage regimen in human carcinostatic studies. These results also provided an explanation for the reported cumulative toxicity and delayed deaths in animals. In addition, the possible use of ACC as a model amino acid was indicated, and comparisons with α-aminoisobutyric acid, extensively used for such a purpose, was discussed.

In an attempt to establish the mechanism of action of ACC, investigations were undertaken with bacterial systems because it had been reported that many other amino-acid analogs can inhibit the growth of microorganisms. ACC failed to inhibit the growth of all eight bacterial species studied by a filter paper disc method. In addition, the exponential growth rate of *Escherichia coli* and *Bacillus cereus* was unaffected by 1.0 mM ACC. This indicated that ACC was not incorporated into bacterial proteins and supported the results obtained in mice *in vivo*.

Studies with 6C3HED ascites lymphosarcoma cells incubated *in vitro* with radioactive precursors were carried out to determine the effect of ACC on the intracellular metabolic pathways of the natural amino acids. The incorporation of valine, leucine, glycine, phenylalanine, serine, proline, and alanine into protein was inhibited partially when ACC was added to the medium at four times the molar concentration of the natural amino acids. However, the incorporation of lysine into protein was unaffected under similar conditions. Although ACC was readily taken up by these cells, it did not replace any natural amino acid in proteins, nor did it interfere with the incorporation into proteins of endogenously formed amino acids. These results indicated that ACC did not have a direct effect on protein synthesis.

The characteristics of ACC transport and the effect of ACC on the uptake of natural amino acids was investigated in 6C3HED ascites lymphosarcoma cells *in*

vitro. ACC was concentrated six-fold by these cells, and the existence of a saturable process for entry was shown. The uptake of ACC was decreased by metabolic inhibitors such as 2,4-dinitrophenol and iodoacetate, which indicated that energy was required for this process. ACC competed for the initial uptake of a series of natural amino acids. These effects suggest that ACC was taken up into the cells by an active transport process. It is believed that ACC was transported by the same process utilized by at least two natural amino acids, because ACC inhibited the uptake of leucine and valine in a competitive manner and underwent heteroexchange diffusion with these amino acids.

The only biochemical effect of ACC determined by this investigation was an inhibition of the transport of some natural amino acids *in vitro*. Whether this effect is related to the mechanism of carcinostatic action *in vivo* was not established. The persistence of ACC in the animal body and the extent of concentration of amino acids by tumor cells were discussed in relation to such a mechanism of action.

A STUDY OF ANTERIOR FEMORAL CURVATURE IN MAN

by NORMAN AARON WALENSKY*

The present study of femoral curvature was carried out on a total of 859 White, Negro, Eskimo, and American Indian femora. Variations in race, sex, and side, as well as ontogenetic changes, have been investigated.

In all the groups studied (regardless of sex), side differences in curvature and maximum femoral length were not significant. Significant lateral differences were found, however, in the location of the point of maximum curvature. Right femora were generally more curved and more distally curved than the left. This may be due to the greater stress of this side during life.

Sex differences in femoral curvature are not statistically significant; the males are only slightly more curved than the females. The major sex difference is one of size, rather than of amount or position of curvature. The females were found to have a slightly more distal point of maximum curvature than the males.

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Pronounced racial differences were observed. The Negro I or near full-blood males are distinctive in three ways: they have the longest and least bowed femora and the most proximal point of maximum curvature. The Negro II males (heterogenous sample) resemble the Negro I group, but they are intermediate between the Negro I and White specimens. White male femora are siginificantly shorter than the Negro femora, generally more curved, and have a more distal point of maximum curvature. The American Indian groups are basically similar in all the femoral features studied. Two features differentiate the Indians from the Whites and Negroes, an absolute and relative stronger curvature and a more distally located point of maximum curvature. The American Indians are the only group that have the point of maximum curvature below midshaft. The femoral characteristics of the Eskimos are more similar to those of the Indians than to those of the Whites or Negroes. The Eskimos have the shortest femora of all the groups studied. They manifest strong shaft curvature, closely approximating that of the American Indians. The Eskimo point of maximum femoral curvature is located more distally than that of Whites; but the point in the Indians is still significantly more distal than that of the Eskimos.

The Females of all the racial groups studied exhibit the same general characteristics as the males, but the features are less developed and show less racial differentiation. The White and Negro female specimens have the longest femora, the least amount of curvature, and, in general, the most proximal point of maximum curvature. The Indian and Eskimo females have the shortest femora, the strongest curvature, and generally the most distally located point of maximum curvature. As in the male Indian femora, the distal point of maximum curvature differentiates the Indian female from all the other female groups studied.

An examination of preadult Eskimo and American Indian femora reveals that there is a progressive increase in femoral curvature with age. Shaft curvature increases from a relatively straight conformation in the 3-6 year old specimens, through the 7-13 year old group, to a strong curvature in the 13-19 year old specimens. The right and left preadult femora were found about equally curved at each age level. As in the adults, racial differences in curvature were observed, the preadult Indian specimens were slightly more curved than the Eskimos.

By utilizing the experimental knowledge of both anatomical and anthropological disciplines, insight has been gained into the possible cause of femoral curvature and its racial variation. Numerous investigators have shown that factors acting within the developing shaft itself cause it to take on its basic shape and curvature. Further, it has been shown that the influence of these intrinsic factors are potent in postnatal life. From the available evidence, it appears most likely that shaft curvature is a predetermined limb factor, developing in coordination with the rest of the limb pattern. However, the curvature of the adult femur is the total result of the interaction of this hereditary pattern with the functional—here considered to include environment. The shaft curvature is modified or maintained, depending upon the response of its inherited physical properties to the demands of the functional environment. Thus, it seems that the very nature of the living bone places certain developmental limitations on the variability of the amount and location of curvature.

When the femur is exposed to the stresses of weight-bearing and muscular action, the bone tends to bend where the least resistance encounters the maximum stress. Thus, the occurrence of bending at different levels of the femoral shaft must, in part, be the result of the interaction of the inherited physical properties of the bone and the effects of weight-bearing and muscular activity. Negro femora are longer, heavier, and more dense than those of Whites and maintain an elliptical cross-sectional shape. In general, femora possessing these features seem to be more resistant to bending. The higher placement of the deforming load in the Negro femur as expressed by the crossing of the vertical axes seems to result in less direct stress on the middle or distal part of the shaft and to produce a weak curvature, proximally located. The physical properties of the bone are less resistant to deforming forces and the stresses are centered nearer to midshaft in the Whites than in the Negroes. This results in a slightly greater curvature and more distally placed point of maximum curvature. The accentuated curvature in the Indians and Eskimos may be due in part to the possession of physical properties which are not well suited to resisting the deforming forces. In addition, these femora are subjected to accentuated muscular stresses by the assumption of postures and by activities not common to other races. The bending stresses are known to be more distally placed in bowed femora and the femur is weakest in the region of the bend. Further, Mongoloid femora have a prismatic shape in cross-section, which is not well suited for the resistance of bending forces. The strong crista aspera development in these groups may well be in response to the compressive force and accentuated muscular activity. In this sense the crista aspera grows out to provide strength in the weakest buckling plane. The present study provides additional information on the location, distribution, and degree of femoral curvature.

THE PREDICTION OF OCCUPATIONAL ADJUSTMENT THROUGH MEASURED BEHAVIORAL STYLES

by REGIS HILLS WALTHER*

This dissertation is concerned with improving decisions regarding employee selection, assignment, or occupational choice. It was pointed out that it is relatively easy to measure the knowledge and skill possessed by individuals for dealing with

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immediate situations. What is needed and difficult to do is to make estimates of the ways individuals organize and direct their mental, physical, and energy resources over a period of time to accomplish longer range goals. As a way of accomplishing this objective a self-report inventory, the Job Analysis and Interest Measurement (JAIM), was proposed. The JAIM was designed to measure the qualities of the worker other than his aptitudes, training, or knowledge which have an influence on success or failure in a job, and to determine the behavioral requirements and potential satisfactions of particular jobs. This instrument contains 125 multiple choice items relating to background, interests, attitudes, beliefs, and preferences.

DEVELOPMENT STRATEGY

The strategy for the development of the JAIM used an interlocking combination of empirical, experimental, and theoretical considerations. The unit selected for analysis was a group of workers, who on the basis of supervisory judgment had been found interchangeable, for the most part, with respect to the performance of a particular type of work. Comparisons were then made between different occupational groups and between high and low performers within the same occupational group. The identification of differentiating characteristics of such groups was useful for inferring variables influencing job requirements and workers qualifications. These inferences were then tested by informal experiments and investigations, and as a final step efforts were made to integrate the various inferences in order to give weight to interaction effects, reduce overlap, and provide for economy of application. The self-report multiple-choice inventory used as the measuring procedure provides the advantage of easy quantification and economy. However, in the development of the instrument, efforts were made to avoid premature quantification. Judgment rather than factor analysis was used to determine the content of the specific scales, since there was concern that if factor analysis were used relevant variables would be overlooked because they were not present in any significant amount in the particular population being studied. The final decision as to what items to include for each scale and what weight to give them was made on the basis of judgment for the same reasons.

The JAIM was developed initially on the basis of data which reliably distinguished between high and low performers in several job categories. Available theories were found inadequate to explain the data and new hypotheses had to be formulated, which were tested through data obtained from a wide range of occupations, such as physicists, policemen, ministers, nurses, secretaries, Foreign Service officers, code clerks, airline stewardesses, engineers, Peace Corps volunteers, social workers, etc. It was found that successful people in different occupations could be distinguished with considerable precision on the basis of the responses they gave to the various questionnaire items.

THEORETICAL RATIONALE

These and other findings led to the following assumptions:

1. Individuals pursue the goals of both safety and satisfaction. Frequently but

not always these goals are contradictory and it is necessary to develop a compromise in an effort to maximize both objectives. The behavior of the individual who gets both safety and satisfaction from the same acts will be stable and predictable. The behavior of the individual who gets his safety and satisfaction in entirely different ways will be erratic and unpredictable.

2. Man cannot live alone and therefore must be a member of a social group which as a minimum provides him with protection and enables him to earn a living. The social group imposes obligations and limitations on the individual, and these are enforced through formal and informal rewards and punishments. A most potent reward is approval and acceptance; a most potent punishment is rejection and isolation. The requirements of the social group sometimes, but not always, conflict with the other ways in which the individual has learned to achieve safety and satisfaction. It is therefore necessary that he make some type of a compromise between social requirements and personal preferences.

3. An individual must deal with a very complex world with perceptual and memory resources that are extremely limited. There is an almost limitless amount of information which could be attended to and an almost infinite number of decisions and physical actions which must be completed for the individual to get along in the world. Through conscious effort man has the capacity to deal with only about seven variables at one time and therefore almost all determinations as to what to notice, what does it mean, what to do about it, and the actual physical manipulations of both his internal and external environment have to be performed automatically. He needs to know what he wants, and what he does not want. These are his goals. He needs some notion as to what events or conditions lead to his goals. These are his values. He needs to know when there is a satisfactory match between his values and particular events. These are his standards. He needs ways for getting pertinent and reliable information from, and ways for acting effectively on his environment. He needs to have his energy mobilized at a level which is sufficient for but not in excess of the requirements of the task at hand, and to automatically shift the level of energy mobilization as the task environment changes. All of these elements become integrated into complex patterns of behavior or behavioral styles which are available to the individual with a minimum of conscious effort.

These behavioral styles are too complex to be developed entirely by the individual without assistance. To a considerable extent they are obtained through copying the behavior of someone else. They are also determined in part by the innate characteristics of the individual, his experience with what works and does not work for him, and the social values and standards which he has accepted. Behavioral styles are very difficult to change because the elements work together as part of a functioning system and a change in any particular element usually has ramifications throughout the entire system. Experience sometimes results in slow change but planned change requires the use of a good deal of conscious effort, frequently more than the individual is able or willing to spare.

4. An individual needs to make productive choices among the alternatives available to him. He will be guided by his orientations (his beliefs about the intentions of other people and about his own ability to influence the outcome of events) and

his strategies (the degree to which future consequences of present actions are considered and the degree to which he maximizes safety or satisfaction). The quality of the decision will be determined in part by the amount of relevant information which is available for consideration. This will be determined partly by the efficiency of his system for automatically extracting, organizing, and interpreting information obtained from his environment. It will also be determined by the efficiency with which he consciously obtains additional relevant information, interprets it, and uses it to predict outcomes.

These are the assumptions made regarding individuals. The assumptions regarding jobs relate to the requirements for dealing with power, information, decision making, and the possibilities for satisfactions. In every job power is exerted on the employee to get him to behave in certain ways needed to get the job done. This power can be imposed personally through bosses, associates, customers, collaborators, competitors, and others, and impersonally through standards, regulations, procedures, group norms, social values, etc. Most jobs also establish specific requirements for imposing power on other people to influence their behavior in line with the objectives of the job. Different jobs establish different requirements for dealing with power, and individuals respond in different ways depending on their behavioral styles and whether they perceive the power as legitimate or illegitimate.

With respect to legitimate power ("authority") jobs can establish differing requirements for complying with authority depending on whether the employee is expected to respond to the wishes, the commands, or the standards of authority. Other jobs require that employees respond to authority in terms of task accomplishment. Other jobs require that the employee challenge or question authority. Jobs also establish requirements for dealing with illegitimate power ("aggression"). Some jobs require that the employee stand firm against the aggressor, other jobs require that the individual be capable of smoothing down ruffled feathers, and still other jobs permit the individual to avoid the aggressor. With respect to imposing power on other people, jobs differ in the leadership goal and decision making and motivational strategies. Jobs also differ in the way in which information must be processed and decisions made. Sometimes rapid decisions are required involving only partially explicit considerations, in which case an impressionistic, intuitive approach is most effective. In other jobs the emphasis is on accuracy rather than speed and the considerations can be made explicit, in which case a rational, logical approach depending on formal, deliberate methodology is most effective. Finally, jobs differ in the types of satisfactions they provide. Some jobs provide satisfactions from the exercise of mental capacities, others from the exercise of physical capacities. Some jobs permit satisfactions from social interaction with other people; other jobs permit satisfaction from winning victories or triumphs over others. Jobs differ with respect to whether they provide opportunity for individual achievement either through task accomplishment or achieving high status, or through gaining approval from or pleasing others or identifying with a high morale or high prestige group. Finally jobs vary in the amount of excitement they provide and the ease with which the individual can avoid boredom.

If the individual gets satisfaction from the work and if his behavioral styles

are in tune with the behavioral requirements of the job, he will, in all probability, do superior work. If he has the required knowledge and skills but the requirements of the job are not particularly in line with his behavioral styles, he will do good work only if he is adequately motivated by considerations extrinsic to the job and he is not in competition with individuals whose behavioral styles are consistent with the requirements of the job. If his behavioral styles are antagonistic to the behavioral requirements of the job, he is likely to fail no matter how hard he tries.

The theoretical rationale for the JAIM was developed into a set of postulates, assumptions, and hypotheses which serve as a first approximation. The eventual goal is to state the theory in precise terms so that the elements can be described through axioms, postulates, and theorems. At present the JAIM provides scores for 34 scales relating to basic orientations and strategies, satisfaction, relation to authority, reaction to aggression, leadership goals, leadership decision styles, leadership motivation styles, and cognitive styles. The results for only 26 of them were reported in this study because the remainder have not yet proved their usefulness.

RELIABILITY AND STABILITY OF SCALE SCORES

For technical reasons it was not feasible to estimate the reliability of the JAIM through use of either the Kuder-Richardson formulas or through the split-half procedure. Two test-retest studies were completed. The number of subjects used in both of these studies was comparatively small (twenty-six and thirty-two) and therefore only a preliminary estimate can be made that the average reliability of the twenty-six scales which are currently being used is probably in the middle 80's for a homogeneous occupational group. Two studies were completed of the stability of mean scores of different samples from the same occupational group, and another study was made of the differences in means resulting from different test-taking attitudes. The results indicated that the scores were remarkably stable. In only one instance out of seventy-eight possibilities was the difference between the means for any of the twenty-six scales significant at the .05 level.

TECHNICAL PROBLEMS

The development of the JAIM items and scales was described, and technical problems of self-report inventories as they were dealt with in the development of the JAIM were discussed. A study was reported on the effect of stress on responses to the JAIM. An applicant group was split in half on a random basis and asked to complete the JAIM before employment. One group was told that the results would be used only for research, and the other half was told that they would be used as part of the selection process. It was found that stress did influence the responses given but that the average candidate was not able to anticipate the "right" answers. The effect of stress was different for successful candidates than for unsuccessful candidates, and for the most part the successful candidates were able to anticipate the selection standards actually used. Equating items from the point of view of their "social desirability" was not attempted in the construction of this inventory. Social desirability is not considered to be a unitary concept but varies from subculture to

subculture. In part, the JAIM was designed to measure differences in subcultures. The individual's concepts of social desirability are elements in his personality, have an influence on his behavior, and therefore should be considered. With respect to "response style," it is believed that the "forced choice" construction of most of the questions included in the JAIM should keep the response style of the respondent from obscuring other variables. The issue of the degree to which behavior is caused by unconscious forces is not considered relevant to the JAIM. All that is necessary is for the unconscious or irrational forces to have some reliable representation or coding in an individual's consciousness. The JAIM is based on the assumption that the individual able to make some sort of an adaptation to his environment knows what he likes and dislikes and what he can and cannot do, and he is able to make an accurate verbal report.

OPERATING CHARACTERISTICS

In an effort to get more information about the operating characteristics of the scales, they were correlated with the scales of the MMPI and intercorrelated with each other. The "comply with authority" scales (Accept Commands, Accept Routines, Please Authority, and Internal Standards) were found to correlate positively with each other .50 or more and negatively with Independence and Question Authority. The leadership goals scales (Social Leader, Persuasive Leader, and Executive Action Leader) and Verbal are also highly intercorrelated. The third group of scales with high intercorrelations are Competition, Ambition, Task Accomplishment, Safety vs. Satisfaction, and Excitement. When these three clusters of intercorrelations are eliminated there are relatively few additional positive and negative correlations above .50.

VALIDITY

Studies were made in an effort to establish predictive, concurrent, and construct validity. Certain of the scales were found to be effective for predicting promotions of Foreign Service officers and others for predicting level of performance of stenographers. A number of studies have been completed demonstrating that the JAIM can be used to differentiate among occupational groups. Data has been gathered on a total of 21 separate occupational groups, and highly significant differences have been found between groups; and, as was reported above, stable results have been obtained when different samples have been taken from the same occupation. Each of the scales of the JAIM is based on an underlying hypothesis, and there is a logical relationship between the items in a scale and the hypothesis for the scale. The only data available at present which throws any light on the construct validity of the scales is the intercorrelations of the scales, the occupations with the highest and lowest mean scores, and the scales which predict performance levels for particular occupations. A logical analysis was made of this data, and it was found for the most part that the results were consistent with the hypothesis for the scale. In no instance were the results clearly inconsistent.

POSSIBLE USES OF THE JAIM

The studies already completed indicate that the JAIM can effectively and reliably describe and distinguish among occupational groups, including distinguishing between high and low performers within the same occupational group. It should therefore be useful as a method of job analysis to identify the behavioral requirements and satisfactions established or provided by the job. In a wider sense it might be used as a method of role analysis to compare different roles within a culture and between cultures. A related use is to attempt to determine what standards of judgment are being used when selection, assignment, or promotion decisions are being made regarding applicants or employees. At the present time the JAIM should not be used as the primary basis for making decisions regarding individuals. Its reliability still needs to be established more definitely, and the possibility of "fudging" needs to be considered. With a cooperative client it should prove to be a valuable aid to counseling, by helping the individual understand himself in relation to the potential requirements and satisfactions contained in various occupations. Another use is as an aid to selection or assignment when other sources of information can be used to confirm or reject hypotheses regarding the individual derived from the scale scores of the JAIM.

FUTURE RESEARCH

A great deal of further work needs to be done to improve the items and scales in order to reduce the amount of intercorrelation and improve the sharpness of the discriminations. Further work needs to be done on the eight scales not reported in this study, since each shows some promise which has not yet been confirmed. Additional work is also needed to establish a more exact estimate of reliability. Finally, the greatest amount of work needs to be done in an effort to establish more firmly the construct validity of the various hypotheses underlying the scales and to relate these scales to the scales of other self-report inventories. Studies along many of these lines are already in progress.

THE ROLE OF BILE AND CHOLESTEROL ESTERASE IN CHOLESTEROL ABSORPTION

by CONCORDIA RIVERA BORJA*

Introduction of thoracic duct cannulation in rats (11) has permitted a more direct and quantitative determination of the extent of cholesterol absorption, as compared to the long and tedious analyses of fecal, blood, and tissue sterol after prolonged feeding. Surgical techniques employed to divert bile and pancreatic juice have greatly aided in studying more directly the influence of these secretions on the intestinal absorption of dietary cholesterol. As an analytical tool, the use of labeled cholesterol and related compounds, has afforded greater ease to study the different factors involved in cholesterol absorption. These recent analytical and surgical operations have been utilized in the present study to investigate the role of bile and cholesterol esterase of the intestinal mucosa on cholesterol absorption, and to relate levels of mucosal cholesterol esterase to bile salt circulation and pancreatic juice infusion. The esterification process is also correlated with mucosal levels of cholesterol esterase.

After drainage of both bile and pancreatic juice through a common bile duct fistula in the rat, the small intestine retained its capacity to esterify cholesterol *in vitro* for only a short time, and by 24 hours, the intestinal mucosa had completely lost its cholesterol esterifying activity. When pancreatic secretion alone was excluded through a pancreatic fistula, the esterifying activity of intestinal mucosa was not lost completely. This led to the study of the effects of bile or bile salts on cholesterol absorption, on mucosal cholesterol esterase, and on the esterification mechanism, independently of pancreatic juice.

Complete absence of bile and bile salts in the intestinal tract totally abolished absorption of cholesterol-C^{14} and mucosal cholesterol esterase was essentially nil in common bile duct fistula and lymph fistula animals. Addition of taurocholate to the emulsion fed to common bile duct fistula and lymph fistula animals resulted in a small increase in mucosal cholesterol esterase activity (1.7 mumoles of cholesterol esterified per hour per mg mucosal protein), and a small percentage of cholesterol-C^{14} absorption (4 per cent). The absorption was, however, significantly increased (23 per cent) by a 12-hour infusion of a 24-hour sample of bile enriched with taurocholate to animals deprived of bile and pancreatic juice. Although pancreatic juice was diverted, the esterifying activity of the mucosa was not lost (4.5 mumoles

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of cholesterol esterified per hour per mg mucosal protein), but was significantly lower than that obtained in normal control rats with intact bile and pancreatic circulation (10.0 mumoles of cholesterol esterified per hour per mg mucosal protein). Animals with pancreatic fistula and intact bile circulation through an artificial bile duct absorbed cholesterol-4-C^{14} to essentially the same extent as those which received enriched bile through infusion, and control rats. The esterifying activity of mucosal cholesterol esterase in animals deprived of pancreatic juice and with normal bile circulation (6.8 mumoles of cholesterol esterified per hour per mg mucosal protein) was lower than the control value (10.0) found in rats with normal bile and pancreatic circulation. Reduction of bile salt supply resulted in decreased absorption of cholesterol, and no absorption of cholesterol occurred in the absence of bile or bile salt. The possibility of some synthesis of cholesterol esterase by intestinal mucosa or a reactivation of residual cholesterol esterase in the presence of bile salts is discussed, since the esterifying activity of mucosal cholesterol esterase was not completely lost even when pancreatic juice was withdrawn.

Pancreatic juice when infused alone was found to have no effect on cholesterol absorption in animals lacking intact bile circulation. However, when pancreatic juice together with bile was infused to common bile duct fistula and lymph fistula animals, absorption reached 14 per cent, a level significantly lower than that found in normal control rats (27 per cent) with intact bile and pancreatic circulation. On infusing pancreatic juice and *enriched* bile to the same preparation of animals, absorption of cholesterol-4-C^{14} was markedly increased (32 per cent). An insufficient supply of bile salts to transport the cholesterol across the intestinal membrane therefore resulted in decreased absorption, even in the presence of ample supply of pancreatic juice. The stimulating effect of pancreatic juice on cholesterol absorption was evident only in the presence of adequate amounts of bile salts in the intestinal tract. Thus, when a 24-hour sample of pancreatic juice was infused for a period of 12 hours to animals with normal bile circulation, absorption of cholesterol was considerably increased (43 per cent). Pancreatic secretion is not absolutely required for cholesterol absorption, although it has a stimulating effect in the presence of adequate supply of bile salts, and this effect is attributed to its cholesterol esterase content.

The mucosal cholesterol esterase activity of animals which received only pancreatic juice and no bile salt was the same as the activity of those which received bile salts but no pancreatic juice. Bile salts therefore appear to maintain the activity of the mucosal enzyme. Pancreatic secretion significantly increased mucosal cholesterol esterase activity when infused with bile salts or when infused to animals with normal bile circulation. The exocrine secretion of the pancreas thus contributes to much of the mucosal cholesterol esterase, but activity can also be detected in its absence.

In all groups of experimental animals, the degree of esterification of the absorbed cholesterol-C^{14} was relatively high (82–87 per cent). This observation supports the concept that esterification of absorbed dietary cholesterol occurs to a high degree irrespective of the extent of absorption. These findings support the essentiality of the esterification mechanism during intestinal absorpotion of cholesterol as postulated by Vahouny *et al.* (105).

The rate of esterification of cholesterol has been correlated with the level of mucosal cholesterol esterase. The group of animals with intact bile circulation and pancreatic fistula had a mucosal cholesterol esterase activity of 6.8 mumoles of cholesterol esterified per hour per mg mucosal protein, while those which had normal bile supply and received a 24-hour sample of active pancreatic juice for a period of 12 hours, had an enzyme activity of 13.0 mumoles of cholesterol esterified per hour per mg mucosal protein. Cholesterol absorption in the former group (19 per cent) was less than half of that obtained in the latter group (43 per cent). Both groups had an adequate supply of bile through an artificial bile duct, but differed significantly in the extent of absorption. These results strongly indicate that the esterification process proceeds at a faster rate with higher levels of mucosal cholesterol esterase, and this results in a greater transfer of sterol from the cells to the lymphatics. This in turn would accelerate the transport of free cholesterol from the intestinal lumen to the mucosal cells, with an over-all increase in absorption.

The purification of pancreatic cholesterol esterase was undertaken as a corollary to the *in vivo* studies on cholesterol absorption. Ion exchange chromatography on DEAE-cellulose, stepwise elution with increasing concentration of phosphate buffer, pH 6.2, increased the specific activity of pancreatic cholesterol esterase about 8-fold. Although the enzyme is relatively stable in ammonium sulfate and alcohol solutions, very little purification was obtained, the specific activity being increased only 1.1–1.5 times that in the original pancreatic juice.

CONSENSUS THROUGH SLOGAN: THE POLICY OF UNCONDITIONAL SURRENDER IN THE SECOND WORLD WAR

by WILLIAM MERVIN CRABBE, JR.*

The January 1943 Casablanca Conference announcement of the World War II Unconditional Surrender policy gave birth to a continuing international controversy. One criticism of the formula—that it was ill-founded in principle—prompted the present study. It is not intended to be an analysis of Unconditional Surrender's im-

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pact on World War II or the postwar world; rather, it is intended to be a modest history of the policy itself, with an emphasis upon the period most neglected in previous studies—the war years prior to the announcement of the slogan. The policy had not previously been viewed in the light of the historical context of the times, or as an American policy decision. The present view is American-oriented, and is concerned with the decision-making process of the time. Three distinct decisions are assumed—one for the adoption of the policy, another for its announcement, and still another for the policy's continuance. These decisions are viewed in the light of certain traditional American influences on the national policy-maker. These influences include prior policy, public opinion, domestic politics, and the prevailing decision-making machinery. The international politics of the wartime years is also related to the three decisions.

Critics of the formula generally view it as a major and causative error of the war; the beginning of several postwar problems, including the Soviet territorial gains and the cold war situation. Inasmuch as the formula precluded any negotiated peace, the detractors believe that it prolonged the war and shattered the enemy nations, creating power vacuums soon filled by the Soviet Union and thus upsetting the balance of world power. Incidental to these effects, many hold that the slogan stiffened enemy resistance, aided enemy propaganda while undermining the Allied effort, and increased the totality of the war.

The defenders of the Unconditional Surrender policy deny the validity of the charge that the policy prolonged the war, and particularly dispute the theory that without the announcement of such a drastic war aim it would have been possible, or desirable, to negotiate a peace with a German anti-Nazi resistance group. On the positive side, the defenders generally view the policy as having been a material contribution to the war effort inasmuch as it preserved the delicate Allied unity by overcoming the fears of a separate peace and the disruptive influence any attempt to formulate specific war and peace aims would have on the partnership as well as on the home front. Moreover, the defenders presume, it preserved a desirable freedom of action for the Allies.

Another debate over the Unconditional Surrender policy—that concerning the rationale of its adoption—unlike the controversy over consequences, has approached the point of resolution. The debate began with a consensus that the slogan was the result of a snap decision. Thus the early speculations over rationale saw the slogan as an immediate answer to propaganda needs or separate peace fears. Nevertheless, some who participated in the early debate held it as a matter of faith that the policy had been deliberated. Then came an account of the formula having been first discussed at Casablanca some days before the announcement.

Soon there was additional evidence of the policy's deliberation; first the disclosure of its discussion at an early January 1943 J.C.S. meeting, and then the report of a State Department subcommittee consideration as early as the spring of 1942. The new evidence tended best to support another early theory and the one motivation admitted by both Roosevelt and Churchill; i.e., that the experience of World War I—the failure of the "14 Points" and the Nazi use of it, as well as the claim that Germany had not suffered a military defeat—had made the policy necessary. Being

familiar with the World War I problems, Roosevelt was advised to use the slogan by at least one confidant, Norman Davis, and probably had the thought confirmed by two others, General Pershing and Senator George Norris. Although the slogan lacked great precedent, Roosevelt entertained a meaning which dated from the early Roman *Deditio*, the key elements being the refusal of advance promises and negotiation, complete victory, and the hope of mercy commensurate with the situation. Roosevelt's emphasis upon the saving feature of the victor's mercy stemmed from the American Civil War experience—the kind gestures of Grant toward Lee at Appomattox. Both Roosevelt and Churchill often defined the formula as not applying to the German people, a reassuring exception to the meaning of the *Deditio*.

The disclosures of premeditation did not undermine all of the old speculations. Indeed, one of the earliest of these—that the primary motivation had been to preserve Allied unity—remained popular, particularly the one interpretation which ascribed a key role to the fear of a separate peace.

From the very beginning of the Second World War the British and American war leaders had declined to state detailed war and peace aims. They distinguished peace aims as goals for a postwar period which could not be accurately stated before the realization of victory. The object was to avoid the danger of the Allies quarreling among themselves and of creating or widening splits in home front unity.

The consensus of the American public was that serious discussion of peace aims should await the sign of victory. But, by January 1943, the majority of Americans had come to believe that it was possible to begin planning for peace. Furthermore, they generally appeared to hold a more realistic view of why they fought than had been the case in World War I. The original assumption of the Western leaders that it was dangerous to discuss postwar settlements among Allies, was reinforced by the early probings of Stalin for agreement on territorial and reparation terms to be demanded of the defeated enemy.

Although Unconditional Surrender was not announced until January 1943, the essence of the sentiment had already been established in the years before. Even before the United States entered the war, the specific war aims of Great Britain and the Soviet Union had reflected some elements of the later policy. The war aims announced by the American President and various government officials showed that the outlawing of a negotiated peace was a fundamental policy. Inasmuch as a desire for a negotiated peace was viewed as a form of appeasement, there arose a counter demand for a total victory. Although Americans rejected the thought of dismembering Germany, their evolving policy appeared to favor the destruction of enemy militarism. Roosevelt followed the expressions of subordinates in the case of two war goals. The first instance was that of war criminal trials, which he was to endorse heartily and to foster. And, although he had meanwhile introduced the concept of extensive disarmament, Roosevelt again trailed his subordinates on the ambiguous aim of enemy "re-education."

The total sentiment was not new to Americans. The experience of World War I, for example, showed that the majority of the public had favored a hard line, and they found it in the popular Unconditional Surrender phrase. The First World War mood had also taken hold of the young Franklin Roosevelt, his Cabinet experience only serving to harden his views concerning war and peace aims.

American editorial opinion in the first years of the Second World War often reflected the uncompromising attitude, while the public opinion polls found a general satisfaction with all the specific war aims outlined by the President. In early opposition to the prevailing views, the American isolationist element was largely stilled by the time of the Casablanca Conference, thus making the public will appear more nearly unanimous.

As Commander-in-Chief, Roosevelt possessed several qualities and attributes which engendered the retention of policy decision in his own hands. The Secretary of State and his Department personnel had clearly suffered the loss of their traditional primacy in the formulation of major policies vis-à-vis foreign powers, indeed. the Secretary was generally excluded from the major wartime conferences and often remained uninformed of the results.

Although the service chiefs were to become the principal and most trusted official advisers to the President, they did not enjoy such a role in the period before the Casablanca Conference, having gone unconsulted and uninformed on several occasions. It was only in the last days of the Casablanca preparations that they were belatedly informed of their Commander-in-Chief's intentions concerning the Unconditional Surrender policy.

The early war Congress was particularly unable to influence Roosevelt's policies. The Executive bullied or bluffed the Congress into surrendering or abandoning the very powers essential to the delicate balance within the American system.

Several critics of the Unconditional Surrender policy regretted the announcement more than the formulation, particularly as the Casablanca unveiling appeared unnecessary if not premature and pernicious. There were undoubtedly several considerations in the Roosevelt decision for public announcement. Possibly the influence of American politics made the timing appear more propitious to Roosevelt than it did to Churchill. The Congressional elections of 1942 saw the emergence of a Republican "hard war" slogan directed against any "soft war" appeasers advising a compromise peace. The Republicans attributed their victory to the newly found issue while Roosevelt's traditional supporters tended to blame his lack of leadership.

The Casablanca announcement might also have been thought necessary in the interest of preserving Allied unity. The most widely assumed threat to Allied unity —the fear of a separate peace—is an inadequate explanation. Although there had been continuing separate peace rumors at home and abroad, and some United States officials were known to be fearful of a Russo-German deal, Roosevelt's closest advisers, including Harry Hopkins, had discounted the danger. Roosevelt shared this assessment, and imagined that the rumors emanating from Berlin were propaganda stunts designed to split the Allies.

Repercussions over the Darlan Affair of November 1942 quite likely influenced the decision to announce Unconditional Surrender. Although Churchill had expressed his disapproval over recognition of Darlan, and Stalin's generous support of the action might have appeared hypocritical in light of the world-wide Communist campaign to smear the military expediency, Roosevelt was probably looking elsewhere. The occupied nations in particular required an assurance that there would not be a future compromise with one of their puppet masters which would stand in the way of their complete restoration. The neutral nations, on the other hand, could

view the precedent of a compromise peace as justifying a continued perch on the fence. At home, the Darlan deal, for which Roosevelt took responsibility, was not only damned by the liberals, but was also a new issue for the Republicans.

Given the several possible motivations for an announcement decision, a timing coincident with the Casablanca Conference of January 1943 was not unreasonable from Roosevelt's viewpoint. There were definite signs of a turn in the fortunes of war. The Germans had already adopted a hard line to bolster morale. Possibly Roosevelt had a similar pose in mind for the Allies. And the world awaited a stirring message from Casablanca.

The test of Roosevelt's faith in the Unconditional Surrender principle was to come in the long period after the announcement when, for the first time, he experienced opposing wills over the question of the formula's validity. Although, for the sake of unity, he had publicly respected the American President's wishes, Churchill had privately expressed doubts over a too strict interpretation of the formula; several times he urged that it be modified or played down. Only after he had faced the prospect of agreeing to specific terms, and after an unsettling encounter with Stalin at Tehran, was Churchill converted to Roosevelt's position. Stalin was also initially at variance with Roosevelt, probably because of the bitter lesson of an earlier Soviet hard line, and possibly from some pique over the "unilateral" adoption and announcement of the guiding principle. Stalin, who had opposed the formula as impolitic propaganda rather than from any humanitarian urge, was to become its paladin in the final months of Germany's trial by fire.

Enemy reactions to the Casablanca announcement were variform. The Italian people were unconcerned over the demand. But their new leader wished to preserve a semblance of national honor. Already conditioned to expect the worst, the Japanese people had no say in the matter, while their Government at first chose to ignore the war slogan. By the summer of 1945, however, the Japanese leaders refused to accept the terms under any circumstances, standing firm on the preservation of the Imperial House. German reaction was also inconsequential in the first months after Casablanca, probably from fear of aiding any Allied propaganda motivation. Rather, the Nazis emphasized their own determination for a complete victory. Hitler promising no alternative except ruins. If the formula had no great effect upon the masses, it proved most discouraging to the anti-Nazi resistance leaders. Some of them apparently never heard of the many Allied assurances that the policy was not aimed at the German people.

Roosevelt's determination to maintain the principle of Unconditional Surrender was tested by his own psychological warfare experts, field commanders, and Cabinet officers who attempted to secure some modification or definition of the slogan which might ease their particular operational worries. Many of the requests were refused because of poor timing or delayed until there could be a Big Three consultation.

Both Churchill and Roosevelt came to favor postponing the issue of defining Unconditional Surrender. Churchill's principal motivation remained the nasty experience with Stalin. Roosevelt's hesitancy was fortified by the earlier American opposition to any secret agreements concerning territorial changes and the lesson of the internal split over proposals for the dismemberment of Germany. Roosevelt favored general assurances to the German people rather than specific promises to

their leaders. When his Secretary of State first attempted to win his approval for the omission of the phrase in the satellite surrenders, Roosevelt was adamant on the necessity for preserving the principle and avoiding the dangers of its premature abandonment. Only when his hand was forced by Soviet promises to Finland, and by the threat of further independent Soviet moves, did Roosevelt agree to the dropping of the phrase, and then only with the proviso that the principle must yet be upheld.

Roosevelt neither entertained personal doubts nor experienced appreciable opposition over the desirability of symbolic retention of the phrase for the major Axis powers. Although he wished to avoid the problem of defining the formula, preferring to extend any privileges only after an enemy yielded to the basic requirement, Roosevelt nevertheless permitted some modification in the case of Italy, which accorded with his earlier assertion that specific applications might justify a more finely tailored policy. Italy provided the singular example. Favored by the orginial thought of excluding her from the demand, by the absence of vital Soviet interests, and by a willingness to quit the Axis orientation and assist the Allied cause, Italy was to profit from the same type of military expediency which had led to the Darlan affair.

The Japanese capitulation also included some modification of the Unconditional Surrender slogan in an attempt to meet the particular situation. Truman followed the Roosevelt guidelines. Japan also enjoyed certain advantages, including a residual strength and the willingness of both Churchill and Stalin to provide some incentive for surrender.

Japan suffered from a condition not present in the Italian situation: the American people were firmly against a compromise peace with her. Nevertheless, the Casablanca formula was beginning to be debated in the press and in Congress. Military men, advising the need for definition, achieved success in changing the direction of the policy from the enemy nation to its armed forces. Several key civilian officials were also pressing for clarification and in particular wished to see an assurance that the Imperial House would be preserved. Although their efforts had produced some beneficial wording, the key provision regarding the Emperor's fate was not included in the Potsdam Declaration. A generous interpretation at an earlier date, however, would probably not have automatically brought a quicker end to the war unless accompanied by a Soviet act of aggression.

Inasmuch as the Unconditional Surrender policy was adopted, announced, and continued in direct consequence of the German foe, there was hardly a serious desire or demand for its compromise in this one rigid application. After the probability of her defeat became readily apparent, the hope of Germany lay in the overthrow of Hitler by the anti-Nazi resistance, or the making of a separate peace with one of the Allied camps, or even in causing a split between the Allies which might create an opportunity for a less than total defeat. Inept and weak in the early years of the war, the German underground had aroused some suspicions as to its motivation. Only after the Battle of Stalingrad and the subsequent attraction of more German Generals to the Beck-Goerdler group, it appears, was there a possible basis for a successful overthrow of Hitler. Many of the German Generals, however, refused to join the resistance because of a dedication to duty or because of the belief that an

assassination would open the way to a worse fate. All of the Generals were dedicated to securing a separate peace with the Western Allies.

Separate peace fears played a significant role in the course of the later war years. The Allies had always credited the Nazis with attempting to undermine Allied unity by planting separate peace rumors. Nevertheless, there were some suspicions created by certain actions of the Allies themselves. On the one hand, the unilateral Soviet formulation of the Free Germany Committee and Russian negotiation with the Satellite states had alarmed the Western partners. Stalin, on the other hand, was not satisfied with Western conduct in the Italian surrender. A solution was sought in the Moscow Conference pledge to inform always all parties of enemy negotiation attempts.

The year 1943 produced two crises in East-West relations, both stemming from Stalin's suspicious nature. The spring crisis grew out of the second front delay while that in the fall followed a German attempt to negotiate a separate peace. In the first instance, the Soviets may have sought to blackmail the Western Allies with a separate peace threat, whereas in the second instance the Soviets themselves appeared genuinely worried that it was Britain and the United States who were interested in an arrangement with Germany.

Meanwhile, the Nazis had attempted to negotiate a separate peace, first with the East and then the West. Hitler sought to delay a compromise until Germany achieved a better bargaining position, but at the same time he encouraged pointed peace feelers as a possible means of dividing his opponents. The spring of 1945 produced another Soviet alarm over Western plans for facilitating the surrender of the German armies in Italy by allowing the military to arrange for a local unconditional surrender of forces. The Soviets insisted upon the right of equal representation at all stages of any negotiation. The Western Allies' rejection of the Soviet demand served to increase Stalin's suspicions. Roosevelt and Churchill took care to reassure him. Soon after the death of Franklin Roosevelt, Stalin secured an agreement on the "proper" way of handling surrender overtures—Stalin's way. Truman, Churchill, and Eisenhower had become increasingly wary of German designs. With Hitler's fall, there had been new and frantic German attempts to realize the separate peace opportunity. All failing, the remaining German hope in the last days of the war was the transfer of troops and civilians away from the Eastern Front in order to spare them from Soviet captivity. To Eisenhower, however, the German strategy appeared a threat to the new East-West agreement and he felt compelled to foil the effort.

The Unconditional Surrender slogan was adopted because it represented the sum of already existing policy and war aims. The underlying motivation was the memory of 1918. This had dictated the fundamental policy of nonnegotiation. Although the same motivation was not absent in the decision to announce the formula, other considerations were present. Domestic politics and the uproar over the Darlan affair were strong influences. The decision to maintain the principle of Unconditional Surrender was dictated by the seeming validity of the earlier motivations, plus the by then real fear of a separate peace.

Unconditional Surrender was not founded on mistaken assumptions. Rather, the lesson of the memory of 1918 was based on fact. It was not an "idiotic slogan,"

nor a rigid policy, nor a substitute for policy, nor an end in itself. For Roosevelt, it was a means to an end—a new order for the postwar peace. It did not represent a purely military objective of quick and total victory, nor was it inconsistent with the teachings of Clausewitz.

The American people, however, were not kept well informed. The announcement of the slogan foreclosed critical debate. To be against it was to favor appeasement. Without the facts, Americans were not responsible for the slogan. Rather, the slogan stemmed from the lack of a true decision-making process, and from the nature of the Commander-in-Chief. Issues were left for indecision to decide by default. Rather than carefully calculated policy, Unconditional Surrender was founded on a "consensus of mood," and resulted in an ever greater consensus—a consensus through slogan.

The slogan, however, was not responsible for all the ills attributed to it by the critics. Certain of the die-hard detractors have exaggerated the effects of the slogan due to their personal bias. The result appears to be the creation of a new myth which may well match the false legends which grew out of the Versailles settlement.

THE PERFORMANCE OF YOUNG CHILDREN ON THE OBJECT DISCRIMINATION, THE ODDITY, AND THE CONDITIONAL-ODDITY PROBLEMS

by SUZANNE DOANE HILL*

INTRODUCTION

The present study is concerned with the performance of one-, four-, six-, and twelve-year-old children on a set of learning tasks. These are tasks that have come to be regarded as highly promising techniques for analyzing the development of learning both phylogenetically and ontogenetically.

The tasks used in the present study are discrimination learning tasks. The *object discrimination* problem is an example of a nonspatial discrimination task that has been extensively studied. Two objects are presented at each trial, one of which is rewarded regardless of its position. Position is an irrelevant cue for this problem.

The *oddity* problem is more complex. Two pairs of objects are used, only three

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of the four objects being presented on any one trial. The odd object is always correct regardless of its position or of which object it is. There are two irrelevant cues for this problem, object and position.

The *conditional-oddity* problem is even more complex than the oddity problem. The stimuli are again two pairs of objects, three of them being presented on any one trial. Two trays are used to present the stimuli. When a tray of one color is used, the odd object is correct; when a tray of the other color is used the even object is correct. On any particular trial, then, the three cues of position, object, and configuration (oddity-nonoddity) are irrelevant.

The earliest work with these three tasks has been with studies using animals. The Wisconsin General Test Apparatus, first used to present these tasks to monkeys, was easily adapted for use with other animals so that phylogenetic comparisons could be made. Studies with animal subjects have given information about the difficulty levels of the three tasks. The conditional-oddity problem is too difficult for sub-primate animals. The oddity problem can be solved by sub-primate animals when it is simplified in some way. The difficulty level of the object discrimination problem is such that it is solved by a variety of phylogenetic orders. Efficiency of performance on this problem increases with age for very young animals, but peak efficiency is reached at an early stage of development.

In the studies of performance of children on these tasks, retarded children have been used primarily. Information about chronological age level and performance has been incidental in these studies, coming from normal subjects who were matched for mental age with the retarded children. These studies have yielded information about the relation of mental age level to performance and about the learning process. (1) Performance on these tasks has been found to be related to mental age. In some cases, however, retarded children have been found to perform less efficiently than expected according to their mental age level, so that intelligence level appears to be a factor as well as mental age alone. (2) Differences have been found in the type of response between higher and lower mental age levels. (3) Improvement in performance has been found to occur suddenly rather than gradually for the object discrimination problem. (4) Explanations of what is learned have been in terms of mediating responses that serve to make stimulus cues more potent. Two major gaps are found in studies of children's performance on these tasks. No systematic data is available for the performance of normal children at various age levels. The trial-by-trial sequence of responses to cues of these problems has not been analyzed.

The aim of the present study is to obtain information about the age levels at which normal children begin to perform efficiently on these three tasks. This information has not yet been provided although these tasks are being used extensively in investigations concerning the phylogenetic and ontogenetic development of learning. A second aim of this study is to explore the nature of differences in performance between children at different age levels and between successful and unsuccessful children at the same age level.

METHOD

The subjects were 105 children at four age levels: fifteen one-year-olds (mean at 11.60 months); thirty four-year-olds (mean at 53.97 months); thirty six-year-olds

(mean at 77.50 months); and thirty twelve-year-olds (mean at 148.15 months). These age levels were selected on the basis of a pilot study.

The apparatus was a modification of the Wisconsin General Test Apparatus. All subjects were given a period of training in order to familiarize them to the task. This training was essentially the same for all subjects, but a longer period of training was necessary for the younger subjects.

Subjects were carried to a criterion of ten consecutive correct responses. Noncriterion subjects were run for 200 trials in the older groups; 100 for one-year-olds. The noncorrection method was used. Correct responses were rewarded with candy.

The position of the correct object was determined according to the Gellermann series for the object discrimination problem. Only the left-right objects were manipulated by the subject for both the oddity and conditional-oddity problems. The irrelevant cues for the oddity and conditional-oddity problems were varied according to the principles underlying the Gellermann series. The problems were presented to the older age groups in counterbalanced order to allow for an analysis of the effect of order of presentation on performance.

RESULTS

If 50 per cent of subjects solving a problem is taken as a standard, the object discrimination problem can be handled by one-year-olds (8/15 reach criterion). This problem is solved quickly by the older age groups (87/90 reach criterion). The performance of four- and six-year-olds looks remarkably alike until transfer effects are taken into account. Performance is disrupted for four-year-olds but not for six-year-olds after experience with an extremely difficult task. The oddity problem is too difficult for most four-year-olds (3/30 reach criterion), is solved by slightly more than half the six-year-olds (17/30 reach criterion), but is well within the scope of twelve-year-olds (30/30 reach criterion). The conditional-oddity problem is too difficult for most six-year-olds (3/30 reach criterion) but is solved by the majority of twelve-year-olds (24/30 reach criterion).

Over 75 per cent of all criterion subjects reached criterion on both the object discrimination and oddity problems within forty trials. Fifty-nine per cent of the criterion subjects reached criterion within forty trials for the conditional-oddity problem. Very few subjects who failed to reach criterion in the first hundred trials reached solution after an additional one hundred trials.

When performance curves were drawn for criterion subjects who were homogeneous in respect to number of trials to criterion, it was found that the curve for fast learners rises sharply. The curve for slow learners has two parts, a chance-like portion followed by a fast-rising portion close to criterion. This difference between fast and slow learners occurs on all problems for all age levels. The performance of noncriterion subjects remains at chance level throughout two hundred trials.

The amount and direction of transfer across these three problems appears to be a function both of the difficulty level of the problems and of age level. If the problem is extremely difficult, prior experience with other easier problems does not affect efficiency of performance. If the problem is extremely easy, prior experience does not affect performance at the six- and twelve-year-old levels, but at the four-

year-old level performance is disrupted if the prior experience is with a very difficult problem. There is some evidence that when the problem is at an intermediate level of difficulty an easy-to-hard sequence facilitates performance while a hard-to-easy sequence disrupts performance.

An analysis of subjects' responses following success and failure revealed that one-year-olds made consistent preference responses, that is they demonstrated a strong position habit, on the object discrimination problem. With more complex problems and with older age groups, subjects appeared to vary in the type of cue they respond to and the type of response they make, both among themselves and over trials.

DISCUSSION

It has been found that under the conditions of the present study, efficient performance can be expected on the object discrimination problem at the one-year-old level; on the oddity problem at the six-year-old level; on the conditional-oddity problem somewhere between six and twelve years.

When transfer effects as well as final performance levels are considered, a more adequate description of the efficiency of performance at various developmental levels is obtained. The difficulty level of the problem toward which the transfer is directed appears to be a factor controlling the presence of transfer across problems. For example, an easy-to-hard sequence was seen to facilitate performance at an intermediate level of difficulty but not at an extreme difficulty level. Age also appears to be a factor. Performance was disrupted for four-year-olds but not for six-year-olds when the object discrimination problem followed an extremely difficult problem although the object discrimination problem had seemed to be at the same level of difficulty for both ages by all other measures.

The early problems in the easy-to-hard sequence did not provide subjects with a large amount of experience since subjects reached criterion quickly at all age levels. It is possible that with larger amounts of experience on the first less difficult problems, performance might have been facilitated for extremely difficult problems as well as for those at intermediate levels of difficulty. It is also possible that increased experience might have different effects dependent on age level. An experimental test to separate experience effects and age effects is available in the use of over-learning techniques. It is suggested that early problems be over-learned at critical age levels (four years for oddity; six years for conditional-oddity). If the amount of experience is more important than age level, over-learning easy problems should increase transfer and facilitate performance on extremely difficult problems. If, on the other hand, age level is a limiting factor on performance, even very large amounts of over-learning should not facilitate performance on extremely difficult problems.

Analyses of performance curves show that performance is either improving rapidly or not at all at each age and difficulty level. For criterion subjects there is an initial chance-level portion of the curve followed by a sharp rise in performance close to criterion. This rise in performance appears to be similar at all age and difficulty levels, but the chance-level portion varies in length.

One factor that might affect both the sudden rise of performance and the length

of the chance-level portion of these curves is the development of response tendencies. On tasks like these, immediate solution can occur if (1) subjects form a response tendency that is consistent with problem solving and (2) apply it to the relevant cue. Either preference responses or win-stay, lose-shift responses may be defined as problem solving responses, because if either of them is applied consistently to the relevant cue, criterion is reached. In contrast, both alternation and win-shift, lose-stay responses are no-solution responses because their consistent use prevents subjects from reaching criterion.

It was found from an analysis of the trial-by-trial sequence of choices that one-year-olds consistently respond to the object discrimination problem with preference responses to position. This preference response did not appear to develop over successive trials. It appeared to be a mode of response available to one-year-olds at the beginning of trials. Both criterion and noncriterion subjects exhibited these preference response tendencies. If one-year-olds who reach criterion do so because they shift a perference response away from position (irrelevant cue) and apply it to the correct object (relevant cue), one might explain their success with the problem in terms of attention, a conclusion Zeaman and House have reached with retarded children. Criterion subjects had a response available that could be applied to the relevant cue. Noncriterion subjects had the same response available but did not attend to the relevant cue. The performance of older subjects was not characterized by the consistent use of any particular response tendency. The data suggest that these subjects employ a variety of responses and make frequent changes both in type of response and in the cue attended to.

SUMMARY AND CONCLUSIONS

The object discrimination, oddity, and conditional-oddity problems have been presented to one-, four-, six-, and twelve-year-old children. The problems were presented in counter-balanced order to the older age groups so that transfer effects across problems could be noted as a function of order of presentation of the problems. A trial-by-trial analysis of the sequence of subjects' choices over trials was made.

From the data it seems reasonable to conclude:

1. If 50 per cent of subjects reaching criterion is taken as a standard, then the object discrimination problem can be handled by one-year-olds, the oddity problem by six-year-olds, and the conditional-oddity problem somewhere between six and twelve years.

2. Improvement on these tasks occurred suddenly rather than gradually. Performance remains at chance levels until shortly before criterion when there is a sharp rise in performance level.

3. On these tasks, subjects who do not reach criterion in one hundred trials are unlikely to do so with an additional one hundred trials.

4. The amount and direction of transfer from previous experience with one or more of these problems is a function of the difficulty level of the problem as well as age level.

5. The major response tendency found in an analysis of the sequence of choices over trials was a position preference on the part of one-year-olds on the object discrimination problem. With more complex problems and older age groups, subjects varied in the type of response tendency they use and the cue they attend to, both among themselves and over trials.

UTILIZATION OF GOVERNMENT-OWNED PATENTED INVENTIONS

by MARY ALIDA HOLMAN*

The government owns about 12,000 patents, acquired mainly from its research and development activities. The government is now the largest single owner of patents, and it is probable that the government's patent portfolio will double in the next decade as research and development expenditures continue to mount. The nature and extent of the use af these inventions is a point at issue in public debates about the disposition of patent rights arising from government-sponsored research. Under an Executive Order, government agencies are required to take title to inventions developed by employees. There is no uniform patent policy for inventions originating from research contracts. Some agencies follow the title policy and require contractors to assign patent rights to the government; whereas other agencies follow the license policy and permit contractors to retain titles to patents.

With the exception of the National Space and Aeronautics Administration, advocates of the title policy include officials in the government agencies following that policy. Advocates of the license policy include industry, the patent bar, nonprofit research organizations, and trade associations.

The main goal of this paper is to determine empirically the nature and extent of the commercial use of government-owned patented inventions and the causes for nonutilization. The study tests the validity of the hypothesis made by advocates of the title policy—that government ownership of patents promotes the greatest possible use of inventions arising from government-sponsored research because they are freely available to all. For comparative purposes, the extent of government use is also determined.

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THE ECONOMICS OF GOVERNMENT-OWNED PATENTS

The economics of the patent system rests on the advance of technology by granting temporary monopoly rights. On the one hand, advances in technology can stimulate economic growth. On the other hand, monopoly rights to inventions can preclude diffusion of new technology and can hinder the maintenance of competition. Government ownership of patents strikes the heart of the patent system because the inventions are freely available to all. Advocates of the patent system contend that patent protection is necessary for innovation. Although exclusive rights prevent immediate imitation, long-run dynamic competition spurs competitive innovation. Producers must keep ahead of rivals by developing superior products and cost reducing processes. The social costs of exclusivity, of course, depend on whether or not competitive innovation results in an unnecessary waste of resources. The social costs also depend on whether or not the innovation would have taken place in the absence of the patent system.

Innovation can stimulate economic growth by generating higher rates of capital formation and by creating greater efficiency in the utilization of a given amount of resources. The introduction of new consumer products and more efficient capital goods can induce a rise in aggregate investment demand, with capital formation and higher levels of real income. Technological change can result in shifts in the production function, with increased productivity and higher levels of real income. Investment in innovation is the use of new and unproved processes and the production of unproved products. Producers estimate the expected yields from possible innovational investment projects compared with the capital productivity of alternative investment outlets. Patent protection can alter incentives to invest in innovation by reducing risks associated with immediate imitation, i.e., the possibility of not recovering development costs.

Free availability of government-owned patented inventions implicitly assumes either that patent-induced innovation is not important for the commercial use of government-owned inventions; or that the social costs of monopoly exceed any social benefits accompanying greater utilization. Most government-owned patents orginate from military research. There is no reason to assume that these inventions require less further development than inventions arising from industrial research.

ACQUISITION OF PATENTS BY THE GOVERNMENT

Although most government-owned patents arise from the work of government employees and contractors, the government acquires patents by other means. These include seizures of enemy-owned patents, international agreements, purchases and donations. Executive Order 10096 requires all government agencies to take title to patented inventions developed by employees. Almost all patents administered by the departments of Agriculture; Interior; Health, Education, and Welfare; and by the Tennessee Valley Authority orginate from the work of employees. The Atomic Energy Commission holds very few employee patents. Employee patents constitute about one-third of the patents held by the Department of Defense. Officials in the

Department of Defense interpret Executive Order 10096 less strictly; that agency takes proportionately fewer employee inventions than some other agencies.

About 60 per cent of all government-owned patents arise from contract research work. Almost all of these inventions are administered by the Atomic Energy Commission and the Department of Defense. The Atomic Energy Commission usually requires contractors to assign patent rights to the government; whereas the Department of Defense acquires patents as a defensive measure against possible infringement suits. The Department of Defense takes title only after contractors relinquish their option to patent rights, presumably because the inventions do not hold sufficient commercial potential to warrant patent prosecution.

The government owned 11,674 unexpired patents on June 30, 1961. About one-half of those patents were acquired during the last five of the seventeen-year period. The average annual rate of acquisition rose from 50 patents in the mid 1940's to 1,175 patents in the late 1950's. On June 30, 1961, private individuals and corporations owned about 23,000 patents arising from government-financed research.

ADMINISTRATION OF GOVERNMENT-OWNED PATENTS

The most important matters in the administration of government-owned patents are the dissemination of technology embodied in the inventions to private firms and the conditions under which business concerns are permitted to commercialize the inventions. Successful transmission of new technology, however, does not necessarily result in widespread commercial use. Some patented inventions might not be economically competitive with alternative investment opportunities. To some extent, the terms on which the government makes its patents available for use will alter incentives.

With relatively minor exceptions, the government has consistently followed two policies in the administration of its patents. The government agency acquiring patents has the chores of administration, and the patents are licensed on a revocable, nonexclusive, royalty-free basis. Recommendations for administrative change, however, have frequently been made. Such proposals date from the period of World War I. Most contain one or more of the five following provisions: (1) royalty payments; (2) exclusive licenses; (3) sale of patents; (4) cross-licenses; and (5) a central administrative agency.

Royalty payments are usually justified as an equitable means to recover constantly rising government research and development expenditures. They are considered "just" because they can provide a mechanism to shift the burden of paying for government research from the general taxpayer to those directly benefiting—consumers of the final products. Under most assumptions for marginal pricing, the producer bears some of the burden of a royalty payment. Conceivably, producers might not incorporate new inventions that benefit the public, such as air-safety equipment, because the increase in cost from a royalty payment might exceed any increase in revenue. Experience of the U. S. government, the British government, and U. S. government contractors holds little promise that the government could earn more than a few hundred thousand dollars annually from royalty payments. Patented in-

ventions arising from government-sponsored research are military-oriented; they hold little commercial potential or value.

Provision for exclusive licensing is recommended to reduce risks associated with innovation. If the government established a policy of exclusive licensing, it would have to select licensees. Selection based on competitive bids is in complete accord with our competitive market system. Recommendations for sale of patents after they are acquired by the government are also attempts to provide patent protection. The objective of cross-licensing agreements is to reduce procurement costs.

A central administrative agency would have the responsibility for: (1) acquisition of patents; (2) stimulation of research and invention; (3) dissemination of information about patents; and (4) control and stimulation of commercial use. The last two functions are the most important. Information programs can range from publication of lists of government-owned patents to costly demonstration and pilot plants. Similarly, measures to encourage use can range from issuing licenses to costly invention development projects.

PATENT POLICIES OF OTHER GOVERNMENTS

The patent policies of other governments are a mixture between the title and the license policy. The governments of Australia, Austria, Italy, Norway, and the United Kingdom follow the title policy; whereas the governments of Sweden and Switzerland follow the license policy. As in the United States, both policies are used in Canada, Western Germany, and Japan.

Only Canada and the United Kingdom have central agencies to administer inventions originating from government-sponsored research. Although required by law to be self-sufficient, the British National Research Development Corporation has incurred sharply rising deficits during its fifteen years in existence. The Corporation incurs a loss on 84 per cent of the patents it acquires. Canadian Patents and Development, Ltd. has a very small surplus. An accumulated deficit, however, was eliminated at the expense of reduced invention development projects.

OTHER STUDIES ON UTILIZATION

Early estimates on the rate of use of privately owned patented inventions, based on speculative conjectures, were low—between 1 per cent and 18 per cent. In the late 1950's, two comprehensive empirical studies were undertaken. They show that the proportion of private patented inventions actually commercialized is substantially higher than was formerly believed—between 35 per cent and 65 per cent. Despite the active information program of the Alien Property Custodian during World War II, firms licensed to use vested patents reported a low rate of use—between 7 per cent and 10 per cent.

Information from two other studies indicates that the rate of commercial use of patented inventions arising from government-sponsored research, but owned by contractors is low—between 7 per cent and 13 per cent. Patented inventions owned by contractors are not utilized because their commercial potential is low. The commercial value of these inventions is also slight.

Officials in the Department of Agriculture can cite specific examples of use for 10 per cent of the patented inventions administered by that agency. A study on the use of government-owned patented inventions held by the Department of Defense indicates that only 23 per cent of the firms licensed actually commercialized the inventions. Licensed firms also receive small average annual earnings from the use of these inventions.

COMMERCIAL USE OF GOVERNMENT-OWNED PATENTS

Primary factual data about the use of government-owned patented inventions were obtained from random samples of inventors and licensees. In addition, individuals and firms requesting information about government-owned patents from the Small Business Administration were queried to obtain information about use without licenses. Because there was no clearly defined universe for this group, the random sampling technique could not be used.

Commercialization of government-owned patents has much to do with the kinds of inventions and the amount of further development required for use. Some inventions have military applications only. Other inventions have immediate commercial applications. In between these extremes are military-oriented and civil-oriented inventions that have commercial potential after slight, moderate, or extensive development work is undertaken.

Patents owned by the government differ from any other collection of 12,000 patents. Because most of the inventions originate from military research, they are defense-oriented. About one-third of the patents owned by the government fall into five U. S. Patent Office classifications. The five classes include technology on radiant energy, inorganic chemical procedures, electric and wave energy chemistry, ammunition and explosive devices, and ordnance. The technology embodied in a sizable block of patented inventions administered by the Department of Agriculture pertains to chemical carbon compounds, bleaching and dyeing processes, foods and beverages, and fermentation. About one-half of the inventions owned by the government require further development for commercialization.

Data provided by inventors show that between 10 per cent and 15 per cent of all government-owned patented inventions are used. Differences in the rates of use among agencies administering patents are slight. The main causes for nonuse of patented inventions reported by inventors are: product for government use only, insufficient market demand, and insufficient competitive advantage.

Licensing is a poor measure of the rate of commercial use. Only 13 per cent of all government-owned patents have one or more licenses outstanding, and only 26 per cent of these inventions are actually used. Commercial use of these inventions does not result in either a significant increase in sales or substantial reduction in costs of production. On the average, the amount of further development work on inventions reported commercialized is less than that for all government-owned patented inventions. Relatively few of the commercialized inventions fall into the five most important U. S. Patent Office classifications for all government-owned patents. The major causes for nonuse reported by licensees are: too much sales or development effort, product outside market line, and substitutes readily available. Com-

mercial use of government-owned patented inventions without licenses is a widespread practice in the sense that almost all commercialized inventions are used without licenses. There is no evidence to suspect that the rate of commercial use is greater than 10 per cent to 15 per cent because of use without licenses.

METHODS TO ENCOURAGE COMMERCIALIZATION

If the government changed its policy and granted exclusive licenses, the rate of commercial use would increase from between 10 per cent and 15 per cent to between 20 per cent and 25 per cent. Government ownership of patents is not the most important reason for the lack of commercial use. Most inventors believe that the government does all that it should do to encourage the commercial use of inventions after they are acquired. Inventors are also satisfied with the effectiveness of governmental efforts to disseminate information about government-owned patents. This does not mean, however, that most inventors think that the title policy promotes the most widespread use of inventions orginating from government-financed research. About three times as many inventors believe that the title policy does not encourage use than those who think that it does. Firms licensed to use government-owned patents also disapprove of the title policy. This is true even of firms that have actually commercialized government-owned patented inventions.

GOVERNMENT USE OF ITS OWN PATENTED INVENTIONS

Government purchases of goods and services for the national defense constitute about 10 per cent of the gross national product. Some unknown proportion of the goods bought by the government incorporate government-owned patented inventions. About 60 per cent of all government-owned patented inventions are used by the government in production or in research and development activities, mainly for the national defense. This includes use by government employees in government installations, as well as use by government contractors. Much information about government use of its own patented inventions is enshrouded in mystery because of security restrictions. It is known that about 25 per cent of the inventions used by the government cover technology on ordnance, explosive devices, and ammunition. Also, most of the inventions are components of products rather than processes. The government uses relatively few of its civil-oriented inventions. The purpose of the research from which these inventions originate is the advancement of specific technologies—agriculture, chemical fertilizers, and atomic energy. This objective is usually accomplished through the commercialization of the new technology by private business firms.

CONCLUSIONS

Most patented inventions are developed, owned, and commercialized by private enterprise. In the United States, the government does not usually engage in commercial activity. When it does, such activity is explained by national defense requirements. The government's commercial activities in the fields of electric power

and lending are exceptional. If government-owned patented inventions are to be used, commercialization must be undertaken by private enterprise.

The government uses about 60 per cent of its own patented inventions, principally to increase the effectivenesss of the national defense. Government use of new technology can contribute to economic growth in the same way as commercial use—formation of new capital and more efficient use of a given amount of resources from technological change. Because government purchases of goods for the national defense are only 10 per cent of the gross national product, the impact of government use of its own patented inventions should not be exaggerated.

The rate of commercial use of government-owned patented inventions is low—between 10 per cent and 15 per cent. Lack of patent protection arising from government ownership, however, is not the main reason for the low rate of use. Most inventions cover defense-oriented technology and appear to have slight commercial potential. Most government-owned patented inventions are not commercialized because more advantageous alternative investment opportunities exist for producers. Many of these inventions have only government applications. There is an insufficient market demand for the final products of others.

Except for the Department of Defense, officials in government agencies actively encourage the commercial use of patented inventions. They give technical advice, publish information about new technology, and sometimes present technical demonstrations. The Office of Technical Services, Department of Commerce, and the Small Business Administration also disseminate information about government-owned patents. There is no justification for an expansion in the information program, if the expansion necessitates large outlays of public funds. The additional costs would probably exceed additional benefits derived from incremental use.

Because the possibilities of increasing the commercial use of government-owned patented inventions are slight, the contributions that a central administrative agency could make are small. Because government agencies sponsoring the research from which the inventions arose could and would not relinquish all administrative responsibilities, there would be unavoidable and unnecessary duplication of facilities and activities. If a central agency undertook any invention development work, the agency probably would not be self-supporting. This is the experience of the British central administrative agency. Even without an invention development program, the government probably could not earn more than a few hundred thousand dollars annually from royalty payments.

Provision for exclusive use of government-owned patented inventions would probably increase the rate of commercialization. The possibility of raising the rate of use substantially is remote. Exclusivity probably would not raise the rate of use by more than an additional 10 per cent of all government-owned patents. Possibilities for monopolistic abuse from exclusivity are slight. If exclusivity would create a clear and present danger of monopoly, the government could grant nonexclusive licenses or not license the patented invention.

Government ownership of patented inventions has a slightly adverse affect on commercialization. Additional inventions would be used if business firms had exclusive rights to the inventions. The title policy, however, can be modified to provide for exclusive rights through the sale of licenses by competitive bids.

The contribution of government-owned patented inventions to economic growth is slight. The rate of commercial use is low and the commercial value of that used is also small. The government uses many of its own inventions, but government purchases of goods for the national defense constitute only 10 per cent of the gross national product. If the government continues to direct its research toward defense requirements, there is little reason to believe that inventions acquired by the government in the future will have a greater impact on economic growth than those now owned by the government.

ASSOCIATION OF STIMULATION AND DEPRESSION OF PARASYMPATHETIC NERVOUS SYSTEM ACTIVITY WITH HEMAGGLUTINATION-INHIBITION RESPONSE IN ALBINO RATS

by JULIAN HOPTMAN*

Experimental evidence in support of efforts to extrapolate nervous system function to the immune response and resistance against infectious disease is provocative yet controversial. The purpose of the present work was to study possible modifications of the specific hemagglutination-inhibition (HAI) response to influenza antigen, which might be induced by drugs associated with parasympathetic nervous system depression or stimulation. The results indicate that the HAI response in albino rats immunized with live PR8 influenza virus or killed Asian influenza vaccine is significantly altered under the influence of certain drugs. Treatment with pilocarpine nitrate (120 mg/kg), mecholyl chloride (100 mg/kg), or acetylcholine chloride (100 mg/kg) maintained or enhanced the capability of immunized rats to demonstrate an HAI response. Qualitatively, this response was similar to that observed when the immunized rat was subjected to further inoculation with the antigen which was responsible for its initial sensitization. Quantitatively, the drug-induced responses always closely approximated the primary response to antigen but was not always comparable to the secondary antigen-induced response. Treatment with atropine sulfate (163 mg/kg), an antagonist of the above mentioned drugs, depleted or depressed the capability of immunized rats to demonstrate an HAI response and

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also antagonized the drug-induced immune response. These results indicate that the action of agents unrelated to influenza virus siginificantly altered the HAI response to the viral antigen. The findings also suggest that the results of parasympathetic stimulation and depression may be associated with stimulation or depression of specific antibody release into the blood stream.

An attempt was made to correlate the results of this study with possible explanations for the observed phenomena. The findings challenge the classic viewpoint that renewed antibody production can be induced by secondary inoculation only with antigen related to the initial antigenic experience of the host. None of the drugs used in the study were antigenic and all were unrelated to influenza virus. The data support the view that such drug-induced responses can be manifested only in a previously immunized host. In contrast to the conclusions of various Soviet investigators, this study has demonstrated that certain drug-induced alterations of the HAI response to influenza antigen can occur in the absence of conditioned reflex circumstances. The data indicate that conditioned reflex systems probably are not the basic answer to the question of how antigen-unrelated stimuli or substances alter the immune response. Data from this study as well as known information on the physiological effects of the drugs utilized appear to argue against the possibility that the observed immune response actually was due to mechanical release of depot antibody. More definitive investigation is needed to prove whether depot antibody or newly-formed antibody was involved. In terms of neuro-hormonal explanations, data from this study indicate that the drug-induced HAI response was independent of adrenal function. The results support the generalization that endocrine function may influence specific immune response but is not an integral part of the basic mechanism which underlies the immune response. The possibility of direct interactions with plasma proteins of the drugs utilized in this study also was explored. Various speculations were inferred from known information and present findings.

This study demonstrates the need for more extensive investigation on alteration of the immune response by nonspecific substances. It suggests the possibility of a new insight concerning basic mechanisms of immunity. The findings may be applicable to key problems associated with preventive medicine, transplantation immunity, studies of possible cancer antigens, psychosomatic medicine, and a wide range of events related to environmental stress.

THE DEVELOPMENT OF THE SUBJECTIVE THEORY OF VALUE THROUGH THE EIGHTEENTH CENTURY WITH EMPHASIS UPON CONDILLAC

by ANDREW JACKSON*

I

After 1776, the rapidly growing admiration for the *Wealth of Nations* caused the works of many authors to fall into oblivion. One of them was Condillac's *Le commerce et le gouvernement*. It also fostered a general abandonment of the subjective theory of value that had been gradually assembled until then. This rejection was more complete in England than in France. But, even so, J. B. Say emphasized objectivity, and his utility theory of value cannot be considered fully subjective.

After a century or so, the Austrian School rehabilitated the subjective, or psychological, theory of value. They, like Marshall, made use of a cardinal concept of utility. The Paretian approach showed that this concept could be dropped without the theory becoming less subjective or less sound.

Until three or four generations ago, the theory of value held a place of honor in works on the principles of economics. But it is now granted a lesser importance. For one thing the term and the concept are laden with ethical implications. It seems safer to talk in terms of price theory which itself has become compartmented into theories of demand, of the firm, of partial and general equilibrium, and the like. For another, introductory textbooks now tend to give precedence to macro-economics, especially the study of National Income and its determinants.

Recently *Theory of Games* by von Neumann and Morgenstern revived interest in the notion of cardinal utility, not so much as an explanation of value but as an explanation of behavior in general and in risk situations in particular. It also drew attention to the fact that in 1738 Daniel Bernoulli published a paper in which he made use of the Principle of Diminishing Marginal Utility, mathematically expressed, in order to solve a problem on gambling odds—the Saint Petersburg Paradox. But Cramer and Buffon had anticipated Bernoulli's solution, so that it does not appear altogether appropriate to have baptized the modern theory with Bernoulli's name.

Although the history of economic thought may be considered as well recorded and that there is little current interest in the theory of value or for nonmathematical economists, it does appear worthwhile to re-examine the contributions of a number

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of eighteenth century nonmathematical contributors to the subjective theory of value, such as Galiani, Graslin, Morellet, Turgot, and especially Condillac.

II

It has become traditional to ascribe to Aristotle the original formulation of the distinction between value in use and value in exchange, a distinction that so confused Smith. Actually it would appear that Aristotle distinguished between the direct or proper use of objects and their use in exchange. In this instance as in others, it is difficult to find any clear-cut analysis of the question of value in his works.

That value is not an inherent quality of things, but, rather stems from the desires which men have for the satisfaction or pleasure which is believed to be procured by, as well as from the conditions of availability of, things was clearly appreciated by the mediaeval doctors and by many subsequent authors. Among them we may cite especially (1) Oresme who in his comments upon Aristotle's *Ethics* and in his own *Traictie de la première invention des monnoies* (1366) developed a subjective and accurate theory of value that enabled him to state and explain Gresham's Law long before Gresham himself; (2) Barbon (*A Discourse of Trade*, 1690) whose sound reasoning on value and other problems permitted him to express the true relationship between rent, interest, and the price paid for land; and (3) in between: Copernicus, Bodin, Davanzati, Scipion de Gramont, and Montanari.

III

In the eighteenth century France witnessed the emancipation of the mind from the intellectual dirigism of Church and Crown. Unshackled, scientific curiosity greatly enlarged the scope and extent of human knowledge. Man's individual and social behavior became the object of scientific study. Philosophical empiricism of English origins, especially the Lockist theory, that all knowledge comes from that which the senses perceive and the mind evaluates, triumphed over the Cartesian notion of innate knowledge. Although he cannot be considered one of the leading philosophers of the Age of Enlightenment, the abbé Etienne Bonnot de Condillac (1714-80) more than any other Frenchman further expanded Locke's thesis, especially in the *Traité des sensations* (1754). In it, using the expository device of an imaginary statue, isolated from social environment and coming to life gradually one sense at a time, Condillac not only developed the empirical thesis on the origin of knowledge but also thoroughly analyzed the effects of pleasure and pain as guides in deciding between different alternatives. In all of his works and especially in his *Traité des sistêmes* (1749) and in his *Logique* (1780), he upheld the resort to proven facts as the only basis for science. Opposing Descartes and Leibnitz's use of synthesis, he further asserted that analysis is the only proper method of research in any field. Condillac's individualistic psychology influenced Rousseau, Diderot, d'Alembert, Helvetius, d'Holbach, and Condorcet, and probably also Graslin, Morellet, and Turgot. Lavoisier and Vicq d'Azyr both credited Condillac's method for their own pioneering successes in chemistry and comparative anatomy.

IV

Between 1728 and 1730, each independently trying to explain why few persons would, in practice, offer as much as twenty times the smallest possible winnings to play a certain gambling game, the mathematically computed odds of which are infinity—The Saint Petersburg Paradox—Cramer, Buffon, and Daniel Bernoulli discovered the Principle of Diminishing Marginal Utility. Cramer wrote: "One hundred million give more pleasure than ten million, but they do not give ten times more pleasure." Bernoulli in his "Specimen theoriæ novæ de mensura sortis", in *Commentarii academiæ scientarum imperialis Petropolitanæ* (Petrograd, 1738), stated that "any increase in wealth . . . always results in an increase in utility which is inversely proportionate to the quantity of goods already possessed; that is, $dy = \frac{bdx}{x}$, a formula which he illustrated with a graph. In his *Arithmétique morale* (1777), Buffon published views which he had expressed some fifty years earlier: a coin has a greater value for a poor man than for a rich financier. Like Cramer and Bernoulli, Buffon also held that even with honest odds gambling is always disadvantageous; yet, he observed, very few men are wise enough to refrain from gambling, the ordinary man "often derives more enjoyment from his mistakes than from his wisdom."

It must be noted that these authors were not developing a general theory of value; in fact, the Principle of Diminishing Marginal Utility was not incorporated in the Theory of Value until the 1870's, when it made it possible for the subjective theory of value to gain wide acceptance.

V

Galiani's theory of value is contained mainly in his *Della moneta*, published anonymously in 1750. He wavered between a concept of value in exchange, equal value being given for equal value, and one in which value results from a computation based upon two others, those of the utility and scarcity of the thing being valued. Galiani emphasized that to have value a thing must have both utility and scarcity. A bag of sand from Japan would be a very rare thing in Italy, but having no utility it would have no value. Air and water have great utility, but being plentiful they have no value.

Galiani viewed utility subjectively, as the ability to satisfy wants which arise not only from the need to sustain life, but also especially from psychological causes such as vanity, and which therefore cannot be fully satisfied.

He was aware that scarcity is relative, being "the proportion between the amount available of a good and the use which is made of it." He distinguished between a natural scarcity such as that of natural resources and the scarcity which arises from the labor necessary for production. He illustrated the latter by pointing out that auriferous sand has a value smaller than that of the gold it contains, the difference being due to the cost of the labor necessary to separate the gold from the sand.

Although his theory lacked the concept of marginalism, Galiani clearly expressed the notions of elasticity of demand and of substitution. He also developed the embryo of an equilibrium analysis of demand, price, and production.

VI

In different works, Turgot wavered between what was essentially a concept of value in exchange and one of value in use. One point on which he remained consistent and in full agreement with the Physiocrats was that, in honest exchanges, equal values are given for equal values. As early as 1754, he had written that "it is only the comparison of the need which all the buyers have, taken collectively with the offer of all the sellers, also taken collectively, which establishes exchange value." This was a subjective approach only to the extent that it rejected the notion of value being an inherent quality of things. Although it did take into account some of the psychological factors governing the parties in exchange, Turgot's *Réflexions* (written 1766) did not contain any subjective theory of value.

In 1767, the *Essai analytique sur la richesse et l'impôt* was published anonymously and ostensibly in London. It had been entered earlier in a contest judged by Turgot. Its author was J. J. L. Graslin. Couched in obscure language, the essay was filled with a mixture of relevant and absurd notions. Yet it did contain a clear and adequate definition of wealth and value, well in line with, but not beyond, that of many predecessors. Taking a strong anti-Physiocratic position, Graslin asserted that need alone gives things their value; and that value is a relative quality which results from the comparison of the different degrees of need and from the greater or lesser difficulty in satisfying these needs. In Turgot's words, Graslin developed a rather strange "doctrine of constant and unique value, always expressed as the unit, and of which all particular values are but proportional parts thereof."

In commenting upon Graslin's essay, Turgot reasserted that to have value a thing must be exchangeable.

In 1769, the abbé André Morellet published his *Prospectus d'un nouveau dictionnaire de commerce*. About one-fourth of its three hundred and eighty pages was filled with a discussion of value and money. In it, Morellet went somewhat beyond his predecessors in presenting the subjective aspect of value. He pointed out that certain things have the ability to make an impression on the senses, to serve some use, and that this ability may be called utility or value, and need not result from the comparison of one thing with another. He used several levels of analytical abstractions. He considered first a man in isolation with but one want that can be satisfied by a single good. He then increased successively the number of goods, of wants, and of persons.

Morellet suggested a number of pertinent questions over the concept of value. But he refused to answer them. He rejected the concept of value in use as far as commerce is concerned. In trade only value in exchange is relevant.

At Morellet's request, Turgot drafted an article on value and money for the proposed dictionary. In it Turgot distinguished two sorts of values:

1. *Valeur estimative*, which is that seen by a single valuating person and which is function of:

a) the ability which a thing has to satisfy wants

b) the ability it has to retain its value

c) the greater or lesser difficulty which men must overcome to obtain this object of their desire.

This last factor results from the niggardliness of nature who yields nothing that man does not pay for in labor, time, or resourcefulness. Thus the notion of price exists even for a man in isolation, before there is question of exchange. This *valeur estimative* is therefore more than simply value in use as it incorporates the notion of cost. Turgot considered that the sum total of man's ability to provide for himself may be looked upon as the unit in the measure of all values, particular values being fractions thereof. This point is reminiscent of Graslin's theory, but it was far more coherently developed by Turgot.

2. *Valeur appréciative*, which is a concept close to that of value in exchange. In barter between two persons, each exchanger receives a *valeur estimative* higher than that which he gave. We can readily agree with this. But it is more difficult to do so with Turgot's claim that each exchanger gains as much as the other, the difference between their *valeurs estimatives* and the ratio of exchange being equal. The *valeur appréciative* is therefore the average of the *valeurs estimatives*.

Turgot's draft remained unfinished and was not published until long after his death. Instead, in 1769, he allowed publication of his earlier *Réflexions* the theory of value of which was far less subjective.

In 1769, Turgot wrote a memorandum upholding the necessity and morality of interest. Among the many valid reasons he put forward was a lucid and relevant explanation of time preference.

VII

Despite his advocacy of *laisser faire* and of a single tax based upon landed property, Condillac was not a Physiocrat, contrary to what is often believed. In *Le commerce et le gouvernement* (1776) he strongly criticized other authors, meaning the Physiocrats, for having failed to develop either an appropriate language or a set of basic principles for the science of economics. It was Condillac's explicit aim to compensate for this failure.

In the second edition of *Le commerce et le gouvernement* and in answer to criticism from the Physiocrats Condillac admitted that agriculture comes first as a means of procuring abundance. But agriculture cannot progress without the mechanical arts and trade. Condillac included these under the term of Commerce. Commerce supposes exchange and this in turn supposes that things have a value. Value is therefore the first thing to be explained.

Condillac by-passed the Robinson Crusoe case and dealt directly with value as determined by the interacting estimations of men in society. As an expository method he imagined several stages of civilization from the primitive to a simplified model of eighteenth century Europe. He began his analysis assuming a small and isolated tribe that has just harvested its first crop. Condillac saw three possibilities as to the adequacy of this harvest: shortage, abundance, and over-abundance. He was unable to accept the idea that all economic goods are always more or less scarce relative to the need for them. But he was able to appreciate that the degree of shortage or abundance is mainly a psychological estimation, a matter of human judgment rather than of absolute quantity. As long as the tribe is isolated and cannot trade, the over-abundant part of any crop that cannot be stored is without value.

Condillac's theory was that the value of things is based upon their *utilité*. The word actually means usefulness. It was in this sense that Graslin and Turgot had used it. Condillac, like some of his predecessors, explicitly used this word to mean utility, that is the ability to satisfy wants, regardless of their nature. He pointed out that a more pressing need increases the value of a thing. And, especially, that "utility remaining the same, the value of a thing varies according as to whether it is, or is believed to be more or less scarce or more or less abundant." This statement can easily be illustrated by means of the same graphic that is often used to depict decreasing marginal utility. Although he did not use marginal analysis, Condillac implicitly viewed utility as a schedule, or as a curve.

He held that as long as a thing has utility, it has value, even though this value may be very small. Even water has some value, especially at a distance from a river. Otherwise one would not pay to have it delivered to one's house. To the Physiocrat's claim that such value comes only from the cost of transportation, Condillac pointed out that a thing does not have value because of its cost, but it is because it has value that costs are incurred to produce it.

Although Condillac barely touched upon price theory, he did make two points of interest. He wrote that "as soon as we need a thing it has value . . . before there is any question of exchange. But on the contrary, it is only in our exchanges that it has a price." He also opposed the notion of a precise mechanistic process that predetermines prices even before the goods are brought to market, a notion sustained by the Physiocrats. Condillac visualized traders hesitating, observing, bargaining, and "as soon as a few agree on the ratios to follow in exchange, the others will accept them and prices will be set for that day." Concerning the first point it must be admitted that Condillac's perception was definitely inferior to that of Turgot. The second point can be found, almost word for word, in Cantillon's essay.

Condillac strongly insisted that in exchange one gives that which is a surplus to him and receives that which he needs. Each trader, therefore, gives a value inferior to that which he receives. Condillac only touched briefly upon the advantages of the division of labor; he did not stress the fact that it permits the production of a greater quantity of goods. He emphasized the thesis that exchange creates a greater psychological value for the participants. By allowing cultivators to trade their "surplus" production more efficiently, merchants make it possible for such "surplus" to acquire value. Merchants are thus useful and contribute directly to the formation of wealth. Although this explanation rightly opposed the Physiocratic doctrine of the sterility of craftsmen and merchants, it was weak and easy to ridicule. Yet Condillac used it as a major analytical tool, sometimes even with felicity: he held that even when the rates of exchange are at par, the equal sum of money one acquires in a distant place, in a foreign currency, is more needed, is of greater value than the sum given for it to the banker who effects the remittance through a system of clearing. The banker, like the merchant and the farmer, contributes to the formation of wealth and is entitled to a remuneration.

Condillac's notion of production was confused and often contradictory. His views on distribution were sketchy, scattered, and incomplete. Although he was explicitly aware of time preference, he did not apply this concept to the explanation of interest.

VIII

The Physiocrats, Le Trosne, and Baudeau especially, bitterly attacked Condillac's *Le commerce et le gouvernement.*

J. B. Say also strongly criticized Condillac's economics. Although Say did retain a utility theory of value, it was quite different from, and in a number of details even opposed to, and far less subjective on the whole than Condillac's.

On the whole, Condillac's *Le commerce et le gouvernement* has received but little favorable notice. It has more often been either ignored, criticized, or misunderstood. On the other hand Macleod and Jevons bestowed exaggerated praise upon it. Jevons actually misquoted it! Schumpeter's appraisal, in his *History of Economic Analysis*, is perhaps unduly severe.

Although Condillac's over-all performance in economics was unquestionably inferior to those of Cantillon, Galiani, and Turgot, and although it did borrow much from them, it also contained original and relevant contributions. Its theory of value was more thoroughly and more consistently subjective than that of any previous writer, excepting possibly Barbon's, or than that of any subsequent one for a century.

Although as a philosopher Condillac was an empiricist, and as such professed an aversion for metaphysics, both his philosophy and his economics were essentially introspective and metaphysical. Despite the relevant truths it contained, his emphasis upon the psychological aspects of value failed to take into account more significant and more relevant material aspects of economic activities. Condillac also failed to reach his goal of the establishment of a proper language for the science of economics.

Regardless of its many shortcomings, Condillac's *Le commerce et le gouvernement* contained a more correct knowledge of the principle of value than that which prevailed for a hundred years following.

THE SOVIET THEORY OF PEOPLE'S DEMOCRACY; A CONTRIBUTION TO THE STUDY OF THE PROLETARIAN STATE

by FRANCIS JOSEPH KASE*

The Russian advance into the heart of Europe in the last phase of World War II brought in its train a permanent extension of the Soviet political and military power in Eastern Europe. Under the protection of the Red Army, communist regimes were established in Eastern Europe as an outcome of both the political pressure exercised by the Soviet Union and the maneuvering of well organized local communist minorities acting with advice and instructions from Moscow. For the first time in history, communist governments were able to maintain themselves in power outside Russia, in conditions considerably different from those prevailing in 1917. Making a full use of the advantages derived from the Red Army's presence, local communists employed a wide variety of means to set up governments which would ensure a transformation of Eastern Europe into a purely communist sphere. Historical traditions, different levels of economic and social development, and strong nationalistic feelings called for political forms which would make, at least temporarily, such regimes more acceptable to their peoples. The very concept of "people's democracy" was one of the devices to this goal. The Soviet theory of people's democracy was designed to provide a theoretical justification for the establishment of the communist rule in Eastern Europe and elsewhere.

The present study is intended as a critical analysis of Soviet efforts to provide a theoretical explanation of the communist regimes which emerged at the end of World War II in Eastern Europe and elsewhere, with an attempt to relate the theory of people's democracy to various phases of actual Soviet policy and to appraise its future usefulness for promoting the cause of Soviet communism.

The communist and communist-controlled regimes which emerged in a number of European and Asian countries after World War II were officially labeled in the communist terminology as "people's democracies." In its post-World War II meaning, the name "people's democracy" was designed to describe various Soviet-controlled regimes in Eastern Europe which, despite their ardor to imitate the Soviet Union as closely as possible, still differed considerably from their Soviet model, and whose development toward socialism, while revolutionary in its political and socio-economic aspects, bore little similarity to the pattern once followed by the

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Soviet Union, the most striking differences having been almost complete absence of revolutionary violence and a continuing existence of multi-party coalitions.

The first systematic attempt to define the concept of people's democracy was made in the years 1946-47 by the Soviet economist Eugene Varga, who regarded people's democracy as a new political form, a transitional state between capitalism and socialism, whose purpose was to establish socialism through the development of the nationalized sector of the economy. The general tendency was an emphasis on the newness and uniqueness of the political system of people's democracy. It should be pointed out, however, that this interpretation of people's democracy was undertaken by Soviet scholars rather than by political leaders. The official silence with regard to the new political form apparently led to the conception of a different road toward socialism among some communist leaders in Eastern Europe and, in fact, statements to this effect were made by Dimitrov in Bulgaria, Gottwald in Czechoslovakia, Gomulka in Poland and others. In the majority of cases, the sincerity of such statements was open to question. It seems more probable that the soft-pedaling of communist demands and the stress on national paths to socialism were dictated by strategic motives rather than by a desire to follow a policy independent from Moscow.

The rapid worsening of relations between the USSR and its war-time allies and, in particular, the Yugoslav defection, made it imperative for the Soviet Union to re-establish a strict doctrinal uniformity among its satellites in Eastern Europe. A new, authoritative, interpretation of the notion of people's democracy was made in 1948 by Georgi Dimitrov of Bulgaria who, in his enunciation of the new doctrine, expressly acknowledged Stalin's advice. Dimitrov declared people's democracy to be a dictatorship of the proletariat and stressed the essential identity between the Soviet system and people's democracy. The new interpretation was quickly accepted by all East European communist leaders (except the Yugoslavs). The people's democracies were described as a form of the dictatorship of the proletariat, and the revolution which brought about the establishment of people's democracy was described as a socialist revolution. The earlier views that the people's democratic revolution was essentially bourgeois-democratic were branded as erroneous and anti-Marxist. In about 1952, this version of people's democracy was superseded by a new theory proposed by A. I. Sobolev. Sobolev's theory, which later was adopted by official Soviet reference books, is based on the original Marxist sequence of bourgeois-democratic and proletarian-socialist revolutions and on the notion of the two-stage development originally laid down in the *Communist Manifesto*. According to the new theory, the countries of people's democracy must pass through a bourgeois-democratic stage on their path to socialism. This first stage consists of an anti-imperialist and anti-feudal revolution, in the course of which people's democracy emerges as "something akin to the dictatorship of the working class and peasantry with the working class in the leading role." Since the proletariat during this stage is not strong enough to establish its own exclusive class dictatorship, it must ally itself with other classes, especially the peasantry. The people's democratic revolution, therefore, does not aim at an immediate abolition of capitalism and an establishment of the dictatorship of the proletariat. Since it is directed against feudal survivals in the socio-economic system, it belongs in the category of bourgeois-demo-

cratic revolutions, but is more far-reaching because (1) it fights against imperialism and feudalism, and (2) prepares the ground for a socialist revolution.

The socialist revolution comes as the second stage of the people's democratic revolution during which the proletariat defeats bourgeois capitalism and establishes its own exclusive dictatorship. The people's democratic revolution is thus a process of transition from one stage to another for which the theoreticians of people's democracy have borrowed Lenin's term "pererastanie," indicating an organic process of transformation, a process in which a bourgeois-democratic revolution "grows into" a socialist revolution. During this process, the people's democratic state changes from a joint dictatorship of the proletariat and peasantry into an exclusive dictatorship of the proletariat. The period of transition is marked by an intensified power struggle. It is a paradoxical situation, because the proletariat cooperates with the bourgeoisie on one hand, and fights it on the other. The final goal is to oust the bourgeoisie from its share in the government, and to win the masses for the communist cause. For that purpose the proletariat must take certain steps during the period of transition of the two revolutions:

1. To concentrate in its hands all the key positions in the state
2. To isolate the bourgeoisie, and to win the majority of the toilers
3. To utilize this situation for winning the majority of votes in the elections.

While the essential purpose of the bourgeois-democratic stage of the people's democratic revolution was to carry out various measures of general democratic character, a number of other steps had to be undertaken for a successful transition, such as the establishment of a workers' control over production, confiscation of the property of "war criminals" and "capitalists who collaborated with the occupying forces," and confiscation of the property of the "monopolistic bourgeoisie."

The subsequent socialist revolution is a result of an interaction of popular pressure and administrative measures from above, a phenomenon called a "simultaneous revolution from below and from above." It proceeds without revolutionary violence, through the undermining of the economic power of the bourgeoisie and other devices, such as political demonstrations, seizure of government agencies and military establishments and, especially, through a final parliamentary victory of the communists, as was the case in Czechoslovakia in 1948. It is emphasized that a successful people's democratic revolution can be carried out only with the support extended to the revolutionaries by the Soviet Union which is a *condition sine qua non* for the establishment of people's democracy.

The Marxian sequence of the two revolutions is reflected in two different forms of the people's democratic state, which can be either a joint dictatorship of the proletariat and peasantry or a dictatorship of the proletariat. Whether a particular people's democratic state is one or the other depends on the concrete situation. All people's democracies have already reached the stage of the dictatorship of the proletariat, and one of them, Czechoslovakia, has already reached the stage of full socialism (1960). While there are many examples of proletarian dictatorships at work in various people's democracies, concrete examples of the joint dictatorship of the proletariat and peasantry are lacking. States which are now described as having been formerly joint dictatorships of the proletariat and peasantry were

not called as such prior to the enunciation of the present doctrine of people's democracy, and the classification of the post-war regimes in Eastern Europe as joint dictatorships of the proletariat and peasantry is merely a doctrinal rationalization of the fact that these governments were based on coalitions in which the communist parties played a dominant but not an exclusive role. For the purposes of doctrinal uniformity, the communists call a joint dictatorship of the proletariat and peasantry any coalition government in which they are sufficiently strong but are not yet the exclusive masters. In such a coalition the proletariat is represented by the communist party, whereas the peasantry can be represented apparently by any group which the communists find acceptable, and which is not strong enough to pursue an independent policy.

When the people's democratic state reaches the stage of the dictatorship of the proletariat, it is expected to follow the pattern set by the Soviet state, and to carry out essentially similar functions, with certain modifications which are attributed to the more favorable situation of the people's democratic states.

The doctrine that some capitalist countries may achieve socialism through parliamentary methods was proclaimed officially at the Twentieth Congress. This revision of the communist doctrine of the state was not only a concession to Yugoslavia but was designed primarily for the use of communist parties operating in Western countries and underdeveloped areas. The concept that parliaments and coalitions may be used for the establishment of a proletarian state was consequently incorporated into the doctrine of people's democracy.

The coexistence of various political parties side by side with the communist party is the most characteristic feature of the people's democratic state. However, this innovation also confronted the communist theoreticians with the problem of reconciling the idea of the proletarian dictatorship with pluralism of political parties. A dictatorship implies a single and uniform policy; as such it stands in contradiction to the concept of a plurality of political parties which, in the Marxist analysis, always represent the conflicting interests of different social classes. A multiple party system thus implies a multiplicity of class interests. The answer to the problem was found in the requirement that the people's democratic coalition governments must stand under the leadership of the "working class," i.e., the Communist Party.

Despite the presence of noncommunist parties in the people's democracies, the Soviet theoreticians assert that the Soviet state and the people's democratic state are essentially identical, differing merely in the form of the political organization. The particular emphasis on the delay in the historical development as well as the extolling of the protective and tutorial role of the Soviet Union is intended to imply a status of historical inequality of the people's democracies in relation to the Soviet Union.

A different theory of people's democracy was formulated in Czechoslovakia and Bulgaria. The Czechoslovak and the Bulgarian theoreticians deny the existence of the feudal institutions in their respective countries, and therefore see no need for any bourgeois-democratic stage of the people's democratic revolution. A somewhat different theory also was developed for Communist China in Mao's theory

of "new democracy," which is a joint dictatorship of several classes including the national bourgeoisie. The Czechoslovak, Bulgarian, and Chinese forms are still accepted in the Soviet Union as genuine people's democracies, in contrast to Yugoslavia whose "socialist democracy" is not regarded by the Soviet Union as synonymous with people's democracy.

The most striking features in the development of the Soviet theory of people's democracy are the various changes in its theoretical interpretation. It can be assumed that such changes were not mere intellectual exercises, but were necessary because they had to serve different purposes at various times, in the immediate postwar years, after the outbreak of the Soviet-Yugoslav dispute, and during the post-Stalin period when the direction of communist expansion turned predominantly to underdeveloped countries. In the initial stage, "people's democracy" was an improvised name for the political system emerging in Eastern Europe in the wake of advancing Soviet armies. For a while it seemed as if the Soviet Union was willing to tolerate a limited degree of ideological and institutional diversity in East Europe, and the loose meaning of people's democracy fitted well the atmosphere of correct relations between the Soviet Union and the Western allies, as it advertised the apparent Soviet noninterference in the internal affairs of the East European countries. At the same time, the absence of extreme ideological demands on the part of local communists helped reassure the population that an all-out communist rule was no longer imminent. During the first two postwar years, a complete silence surrounded the theoretical meaning of people's democracy. The first interpretations appeared during the first half of 1947, in the form of a few essays by Soviet scholars who treated the people's democratic state as a transitional form between the bourgeois, parliamentary democracy, and the Soviet system. The local communists appeared to be interested in the economic recovery rather than in ideological programs, and the East European countries outwardly maintained an appearance of parliamentary democracy. They were governed by more or less genuine coalitions in which the communists had a dominant position, yet did not claim exclusive hegemony. The Soviet Union, while keeping a close watch on its satellites, did not press for an internal sovietization, being not quite certain about the West's possible reaction. The time was not ripe for an interpretation of the East European political systems in terms of the dictatorship of the proletariat.

The lenient attitude of the Soviet leaders towards the interpretation of people's democracy, and their toleration of at least some institutional and ideological diversity in Eastern Europe ended abruptly in 1948. The international situation deteriorated considerably and a serious split occurred between the Soviet Union and Yugoslavia. Moscow had to stop the disintegrating trend and to make it clear that there was only one way to socialism—the Soviet route, which the people's democracies were expected to adopt without exceptions. The Soviet theory of people's democracy cemented the institutional uniformity of the East European countries and brought them closer to the Soviet Union.

With theoretical uniformity thus firmly established, it seemed that no major changes in the theory would come for some time. Nevertheless the theory was

revised again in 1951-52, that is, during the period of a strict Stalinist orthodoxy. The major innovation was the extension of the concept of people's democracy to include political forms which precede the dictatorship of the proletariat, i.e., coalition regimes in which both proletarian and nonproletarian elements were represented. A strict adherence to immutable tenets of Marxism-Leninism demanded a restriction of the noncommunist representation exclusively to the peasantry. However, by including in the joint dictatorship of the proletariat and peasantry such governments as that of postwar Czechoslovakia, the term "peasantry" was interpreted much more broadly than the name indicates. This form obviously included the national bourgeoisie as well. The probable reason for extending the basis of people's democracy to include pre-proletarian forms of government was the intention to find room in the theory for Communist China, whose political system was neither an exclusive dictatorship of the proletariat nor a joint dictatorship of the proletariat and peasantry. The extension of the concept of people's democracy might also have heralded a forthcoming new approach of the USSR to the underdeveloped countries of Asia, Africa, and Latin America. With the new communist strategy emerging after Stalin's death, the new version of people's democracy could be applied to colonial and quasi-colonial countries of the world where the native bourgeoisie was a far more important political force than the workers and peasants.

Sobolev, who formulated the new theory of people's democracy, recognized the importance of the noncommunist elements in the first (bourgeois-democratic) stage of the people's democratic revolution. He still regarded the hegemony of the proletariat in the coalition governments as indispensable, but admitted that people's democracy could also be established in a bourgeois-democratic form in contrast to the earlier Soviet views that people's democracy necessarily had to be a dictatorship of the proletariat. The resolutions of the Twentieth Congress provided an ideological framework for extending the concept of people's democracy even further, by including parliamentary republics among the possible forms of the people's democratic state. The concept of the possibility of employing parliamentary forms for the transition to socialism appeared well suited for the communist parties operating in the underdeveloped countries where cooperation with noncommunist forces is necessary for the communist advance to power.

The shift to the underdeveloped areas required a reappraisal of the role of the noncommunist political groups in the communist strategy. A new approach appeared vital in the treatment of the national bourgeoisie often representing the only important political force in the newly independent countries. Demands for a socialist government along the lines of people's democracy were out of the question under these circumstances. Though developments in the Soviet theory of people's democracy following the Twentieth Congress indicated a trend toward a doctrinal acceptance of broad coalition governments, the notion of people's democracy was already too deeply associated with communism to be of any practical value. A new name was found in 1960 at a meeting of eighty-one communist parties at Moscow. The new form of government designed for the newly independent countries is called "national democracy," a coalition government, which is supposed

to adopt socialism, by-passing the capitalist stage of development in a similar way as did earlier the People's Republic of Mongolia.

While the notion of a "national democracy" is not identical with people's democracy, it nevertheless evolved from it as a result of the Soviet desire to find a governmental form which would justify, in ideological terms, a regime based on a coalition between the communist and noncommunist parties. In this respect there is more than a mere resemblance between the two concepts. Both represent a political system of transition to the socialist stage of society. However, while people's democracy presupposes a dominant role of the communist party in the coalition, national democracy does not stress communist domination, and concedes a more prominent role to the national bourgeoisie.

People's democracy, as a weapon in the communist strategy, appears to have lost its usefulness, and national democracy seems to be the pattern of things to come. It is unlikely that communist propaganda would ever revert to the crude early slogans calling for the establishment of soviet regimes in various countries of the world. Despite its clumsy, yet deliberate pleonasm of the name "people's democracy," the term itself has been far more flexible and adaptable to concrete conditions than its ideological predecessor, the "government of the soviets," and so is, to an even greater extent, the political formula of "national democracy."

IN VITRO STUDIES ON CHOLESTEROL ABSORPTION

by ROBERT MARX MAYER*

Dietary cholesterol has been implicated as an important etiological agent in atherosclerosis. As a result, investigations on the absorption of the sterol have indicated many of the factors involved in the process and some evidence pertaining to the absorptive mechanism. Knowledge in this area has progressed to the point where *in vitro* studies are needed to examine the primary steps of this absorption, namely, the entrance of the sterol into the mucosal cells. In the present investigation a cholesterol-binding mucoprotein, derived from the intestinal epithelium, was studied as a possible transport agent. In addition, factors necessary for the entrance of the sterol into mucosal cells of everted intestinal segments (sacs) were examined.

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The mucoprotein studied was isolated from sacs after incubation in a buffered medium, by rinsing the sac with saline followed by centrifugation of the washings. The isolated material was insoluble in the usual mucoprotein solvents, e.g., 5 per cent saline. The material was found to contain 64 per cent protein, 11 per cent carbohydrate, and 19 per cent lipid. Mannose, glucosamine, fucose, and N-acetyl-neuraminic acid were identified as constitutive sugars. Galactose was tentatively identified. Free fatty acids were the largest class of lipids present, but, in addition, smaller amounts of phospholipids, glycerides, and free and esterified cholesterol were present.

A system for studying the binding of cholesterol by the isolated mucoprotein was developed. This consisted of incubation of a dispersion of cholesterol in phosphate buffer with the mucoprotein. A white precipitate resulted and was subsequently separated from unbound cholesterol by flotation of the latter in a dense sucrose medium (.3 M) in a centrifugal field. Under these conditions the precipitate was centrifuged into a pellet at the bottom of the tube, and this was assayed for protein and cholesterol. By this procedure it was determined that the mucoprotein bound approximately an equivalent amount of cholesterol. This was indicated by the fact that the precipitates formed consisted of cholesterol and protein in the ratio of 0.8–1.0. Earlier studies on the formation of a mucoprotein-cholesterol complex indicated that equal weights of the sterol and protein were present in the complex. This fact indicated that the complex formed in the present study was similar to the one reported earlier. The binding of cholesterol was linear in relation to the amount of protein present in the incubation mixture. The mucoprotein was shown to be saturated with cholesterol when the sterol was present in amounts in excess of the weight of protein present. Studies of the binding of cholesterol esters were carried out, and it was found that both cholesterol butyrate and cholesterol palmitate were bound. However, the degree of binding was different for the two esters. The mucoprotein was also found to bind sterols related to cholesterol (dihydrocholesterol and β-sitosterol) almost as well as cholesterol itself. These two sterols have been shown to be absorbed about half as well as cholesterol, and it had been suggested that the preference for cholesterol is manifested by the sterol-binding epithelial mucin. However, the data reported here is not in agreement with this hypothesis.

A study of the possible role of the mucoprotein in cholesterol absorption was undertaken in an *in vitro* system of everted intestinal segments. It was assumed that if the complex was a transport or transfer complex, then uptake of C^{14}-cholesterol or its absorption (entrance of the sterol into the mucosal cells) should be greater from the mucoprotein complex than in appropriate control incubations. However, neither of these parameters indicated that the mucoprotein-cholesterol complex acted in such a manner. The amount of cholesterol absorbed in these experiments was less than that calculated to enter the wall of a comparable length of intestine *in vivo* (0.2 mg per hour per 12 cm). Variation of the incubation period did not increase the amount of cholesterol absorbed.

In an attempt to obtain agreement between the *in vivo* and *in vitro* systems, micellar dispersions of cholesterol, containing bile salts, lecithin, and oleic acid, were used as incubation media for everted intestinal sacs. The absorption observed under

these conditions was greater than that observed from sonicated dispersions of the sterol. The degree of absorption was about half of the theoretical value. The necessity of bile for the absorption of cholesterol in this system was examined by incubation of sacs in bile-free and bile-containing micellar dispersions of cholesterol. Absorption of the sterol was greatest when bile salts were present, but significant amounts of sterol were absorbed in the bile-free preparations. This latter finding was explained by the fact that residual endogenous bile remained in the sac preparation. However, when sacs were prepared from bile-fistula rats, no absorption of cholesterol was observed from micelles unless bile salts were present. The amount of sterol absorbed in this experiment approached the theoretical value.

Earlier studies had indicated that bile salts inhibited cholesterol uptake in a noncompetitive manner. This observation was confirmed in the present study, and evidence on the mechanism of inhibition was brought out. However, intestinal sacs incubated in bile-containing media were found to have less surface mucin than sacs incubated in bile-free media. This suggested an effect of bile on either the secretion, or solubility of the mucoproteins. When a study on the binding of micellar dispersions of cholesterol with the mucoprotein was carried out, protein was lost from the complex. This suggested that the bile salts present in the micelles caused a solubilization of the material. Isolated mucoprotein was incubated in a bile salt solution, and it was found to be completely solubilized within five minutes. These findings indicated that bile solubilized the surface mucoproteins on sacs, and consequently inhibited the binding and uptake of cholesterol.

The effect of various bile salts on cholesterol absorption in sacs was studied, and was found to be directly opposite to the effects they had on uptake. Whereas taurocholate, glycocholate, cholate, deoxycholate, and dehydrocholate had been found to inhibit uptake in that order, the same order was found in regard to stimulation of absorption.

Little or no conversion of cholesterol to other sterols was observed during the course of sac incubations. The cholesterol which had been absorbed into the mucosal cells was essentially all unesterified.

A tentative picture of the initial steps of cholesterol absorption was developed around the fact that the sterol had to be in a micellar dispersion with bile salts as a necessary constituent of the micelles.

THE DIPLOMATS AND THE DICTATOR: A STUDY OF WESTERN DIPLOMATIC REACTIONS TO THE RISE OF HITLER, SEPTEMBER 1930–NOVEMBER 1933

by RICHARD ROLLAND MERTZ*

This study explores two facets of diplomatic activity, the reportorial and representational. An ambassador stationed abroad is called upon to report and assess domestic political developments in the country to which he is accredited. His basic role, however, is to represent his country's interest in official intercourse with his host country. The first six chapters, or roughly one-half, of this study describe, compare, and evaluate the quality of British, American, French, and Italian diplomatic reporting from the Nazis' first significant electoral showing in September 1930 until Hitler's accession to power on January 30, 1933. The last three chapters consider both reportorial and representational aspects of western diplomacy during the first nine months of Hitler's rule over Germany. The first half of the study addresses itself to the question: how well did western diplomats report on the views, attitudes, and assess the nature and prospects, of the Nazi Party during the waning years of the Weimar Republic? The last half of the study is directed primarily toward two questions: how well did foreign diplomats assess Hitler's prospects and intentions after he achieved power? And, what sort of change or innovation in Germany's foreign relations was wrought by Hitler's advent and the early months of his rule? This study ends with Hitler's first dramatic move in foreign affairs, Germany's withdrawal from the Geneva General Disarmament Conference and from the League of Nations in October 1933.

The documentary limitations with which this study was faced varied considerably. The unpublished archives of the United States and Germany were drawn upon extensively, as well as the published diplomatic reports of Great Britain, Germany, and the United States. In the cases of France and Italy, the source limitations are such as to impose serious restrictions on the nature and scope of analysis. To the extent that derivative and memoir sources allow, an attempt is made to characterize French and Italian reactions to the rise of the Nazis. Although strictly speaking, public and semi-public utterances by French and Italian political leaders cannot be compared with diplomatic reporting, for the first part of this study they are occasionally included to illustrate the official impact which events in Germany produced. Since official reactions are the basic focus of this study, press and other nonofficial sources are used only to throw occasional light on the statements or views of officials.

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In judging diplomatic correspondence, it is first necessary to determine which events are significant, and why. Such decisions are made in the light of present-day historical knowledge. Obviously not all this information was available to the contemporary observer; a new interpretation may be placed upon an event by developments which occurred later. This study is concerned with the problem of evaluating the quality of diplomatic interpretations of the course of German politics. The diplomats' interpretations may be considered in three groupings: (1) those which were correct and based upon a plausible argument; (2) those which were correct though based on an invalid line of reasoning; and (3) those which were incorrect but were based on a plausible line of reasoning. The apparent results of the first two groupings are, of course, the same. The results of the third group are not. When diplomats or statesmen committed serious errors of fact, upon which incorrect interpretations were based, the errors of fact have been noted.

This grouping may be illustrated by considering five examples of the major interpretive problems with which diplomatic observers were confronted prior to Hitler's accession to power: (1) the identification of the principal focus of political power; (2) the assessment of the significance of the 1930 Reichstag elections; (3) the ways in which Nazi programmatic dogmatism was distinguished from tactical expediency; (4) the assessment of Nazi Party growth and consolidation in 1931; and (5) the prognosis for Hitler's political future in 1932. It is impossible to single out one diplomat, or embassy, as outstandingly talented. The various diplomatic observers were neither consistently prescient nor obtuse in their analyses.

An example of how foreign officials succeeded or failed in identifying the principal focus of political power in Germany may be seen in the way in which they treated President Hindenburg's use of the emergency powers granted under Article 48 of the Weimar Constitution. Western observers discounted the perils implicit in Hindenburg's increased use of Article 48, because well-known proponents of parliamentary government in the Reichstag had defended it, whereas Fascist leaders hailed its use by the Field Marshal as a trend toward authoritarian rule. The former did not consider the development significant, the latter did. The former based their assessments on (1) the unworkable composition of the Reichstag (true, but it was partly the result of increased anti-republican sentiment); (2) the extremely difficult economic situation in Germany (true); and (3) the fact that moderate parliamentarians had defended its use (also true, but probably irrelevant). All of these criteria were accurate descriptions of facets of the existing German situation, but they were relatively unimportant in connection with the real problem at hand. President Ebert had used the same clause for similar reasons a decade earlier, but Ebert was not Hindenburg, the 1923 Nazi Party was not the 1932 Nazi Party, and what followed after 1932 did not follow after 1923.

In this case, diplomats used valid information on which to base an erroneous interpretation. Fascist observers, on the other hand, identified Hindenburg (who was not a staunch defender of parliamentary rule) as a primary focus of political power. They considered the increased use of Article 48 to be indicative of a trend toward the further assertion of Hindenburg's executive power at the expense of the floundering and weak Reichstag. The ideological predilections of the western diplomats tended to make them view the situation in parliamentary terms; those of the

Fascists, in authoritarian terms. Hindenburg was a monarchist who personally detested republican ideas and institutions. The Field Marshal was by temperament and background autocratically inclined. Once having exercised arbitrary authority, Hindenburg would be less self-restrained, more inclined to fall prey to easy rationalizations for prolonging and extending the use of absolute power. Perhaps the real reasons were more readily grasped by Fascists because Hindenburg's values and outlook more closely approximated their own.

Official views also diverged on the importance of the 1930 Reichstag elections. American observers considered the results to be indicative of a serious and negative trend in German politics. The results were significant; in this judgment, American observers were correct. But they were probably wrong about the reasons with which they supported their judgment. The American Counselor of Embassy, George Gordon, invoked folk-mystique as an explanation. French Foreign Minister Aristide Briand, on the other hand, attributed the disturbing rise of violent German nationalism to one of the most important causes—the economic depression. But French observers failed to detect a rising negative trend in German political life because they considered the deteriorating economic situation and rising German nationalism to be related in a simple cause-and-effect way, which they were not. The despair resulting from the misery of impoverishment made many Germans more susceptible to an appeal which, since their defeat, had always been effective; but nationalism is intoxicating as well as habit-forming. Once the addiction was acquired, it followed a course independent of its original stimulus, and this course was neither rational nor mono-causal. An economic recovery in Germany would not necessarily imply a corresponding diminution of the existing state of aroused nationalism.

Extreme outbreaks of German nationalism took on a specially virulent form, associated with waves of anti-Semitic violence and acts of brutality. That British diplomats in Berlin viewed this phenomenon with comparative equanimity was not only myopic, but inexcusable, given their knowledge of Germany's relatively brief past history as a state. All observers recognized the increased articulation of German nationalism, but they disagreed as to its cause and its import. Probably the French were the most perceptive observers of this particular development, but they too tended to oversimplify.

British Ambassador Sir Horace Rumbold showed himself more discerning than most of his colleagues when considering the actual content of the Nazi Party program; he believed that the Nazis stood for tangible, though not always clearly defined, goals. The Americans wrote off Nazi ideas and the substance of their program as meaningless embellishments to Hitler's demagoguery—the Nazis were, in the American view, all things to all people, opportunists pure and simple. American opinion of the Nazi program extended to specific Nazi tactics. They believed that Hitler's legality tactic was sheer opportunism designed to pave the way for grabbing power. Rumbold considered legality to be a symptom of Hitler's increasing moderation. And in this Rumbold was incorrect and the Americans closer to the mark—an example of an incorrect British interpretation based on valid but irrelevant facts, and an accurate American intrepretation premised on an assertion which proved to be false (that Hitler had no program whatever and was merely an opportunist).

In 1931, the National Socialists consolidated their organization; the S. A. trebled

in size. Unemployment also grew to alarming proportions. However, 1931 saw no elections of importance and there was relatively little reporting on Nazi extra-parliamentary activities. The Nazis had walked out of the Reichstag in early February. In 1931 Hindenburg invoked Article 48 nine times as often as he had done in 1930; parliament had less than half as many sittings in 1931 as it had had in 1930. Anti-republican sentiment noticeably increased, but was not particularly stressed by diplomatic observers. Foreign officials paid less attention to heightened German nationalism than they had done immediately after the 1930 Reichstag election. For the most part, the poor diplomatic reporting on National Socialist growth in 1931 was a result of inadequate local consular reporting and the absence of a national forum through which the changes in the Nazi Party could be gauged. Hitler's legality tactic tended further to obscure the extent of his Party's size and activities. While the revelations were noted at the time the contents were made public, the long-range significance of the Boxheim papers was ignored by diplomats. Much of the administrative detail contained in the Boxheim blueprint for Nazi seizure of power at the local level bore a striking resemblance to the actual methods used by the Nazis to usurp power after January 1933. The failure of diplomats to see the import of these documents was one of their more serious mistakes.

In the fall of 1932, Hitler was not seriously considered to be in the running: the crest of the Nazi wave had passed. Hindenburg disliked the Bohemian Corporal, and the declining fortunes of the Nazi Party lent credence to the idea that Hitler's day had come and gone. To many observers the Führer appeared to be a political has-been. Diplomats pointed to the Nazis' financial troubles and especially to their declining popularity at the polls.

American Chargé Kliefoth perceived the significance of Hitler's Cologne meeting with Papen's banker friend, Schröder, in early January 1933. Rumbold did not. But both predicted Hitler's accession on the eve of the event. By this time, all observers properly recognized the President as the major force to be reckoned with. Initially they viewed Hitler's Ministry as a coalition under the control of Hindenburg. It would take the passage of several crucial months before they would revise their estimates of Hindenburg's strength, and of Hitler's. While slow in disabusing themselves of the significance of the Reichstag, observers seemed almost as slow (given the tempo of Hitler's rule) in disregarding the idea of a nationalist coalition under Hitler. By extending his legality tactic to the state at large, Hitler helped confuse observers who were prone to place too much importance on the Führer's non-Nazi cabinet partners.

Prior to the Nazi leader's accession, official foreign observers from Western democracies failed to distinguish the form from the reality of political power in Germany. These observers comprehended fully neither the revolutionary character of the Nazi Party, nor the latent civil war atmosphere in which the Nazis thrived. They persisted in treating the Reichstag as a decisive factor far beyond the time when it had ceased to be of determining importance. In this respect, diplomats gave their home governments a false impression of political realities in Germany. Only belatedly did they correctly apprehend the full importance of Hindenburg's position in German political life. This view of German politics was not shared by Mussolini, who saw in the German President the principal wielder of political and military

power. Il Duce, however, was guided more by his emotional empathy with autocracy than by his profound insights into German politics. This is borne out by the ridiculousness of some of his forecasts. In this case Mussolini was right for the wrong reasons.

A second shortcoming was the fact that the American Embassy was badly served by its consular reporting, which was woefully inadequate. If the paucity of its consular reports cited in the *Documents on British Foreign Policy* series is any indication of the volume and quality of British consular reporting from Germany, then it would appear that this criticism would also apply to the British. Because of the poor consular reporting, the American Ambassador had to gauge the situation from the capital, rather than synthesize from the consular reports. There were two noteworthy exceptions to this criticism, but one of the exceptions was stationed in Berlin. American Consuls General Dominian and Messersmith, from Stuttgart and Berlin, respectively, were exceptionally good reporters. Dominian was praised by the American Embassy in Berlin for the quality of his coverage, and Messersmith's reports—in the form of fortnightly letters to Under Secretary of State Phillips—were regularly read by President Roosevelt. It is doubtful if Dominian's reporting received the attention it warranted in the State Department. There are no notations on his reports to indicate that they were seen by Roosevelt or Hull. During the early months of American Ambassador Dodd's tenure in Germany, the quality of political reporting from the United States Embassy declined. The inadequacies of Dodd's reporting, however, were mitigated somewhat by Messersmith's letters to Phillips.

Third, by generalizing the explanations for political phenomena, i.e., by appeals to the general character of "the Germans," diplomats failed to penetrate more deeply into the actual political events confronting them. In this respect, both French and Italian observers were less prone to give vent to their own particular pet stereotype of "the German." French officials, including French Ambassador Andre François-Poncet and other observers, eschewed such over-simplifications; more presciently, they chose to examine the German economy and the condition of the petit bourgeoisie in striving to understand developments in Germany. Briand saw no particular distinction between rampant French and rampant German nationalism.

For the most part, American observers comprehended the meaning and intent of the National Socialist movement more consistently than did their British colleagues, who looked upon mounting German nationalism with some (admittedly mixed) favor. However, the complexities, and inchoate, informal characteristics of German politics in the declining years of the Weimar Republic imposed such severe limitations upon foreign diplomatic observers that the quality of their analyses would probably have been seriously impaired in any case. Only long after the events would it be possible to sort out the facts and to give them some semblance of a coherent interpretation.

In assessing how well the diplomats comprehended Hitler's role in German foreign policy during the early months of the Third Reich, two basic questions emerge: what were the differences between Hitler's foreign policy and that of his predecessors? Were these differences apparent during the first nine months of his Chancellorship?

Even under Hitler, revisionism and several old nationalist policy goals were actively pursued by such non-Nazi nationalists as Schleicher, Neurath, and Papen.

There were several obvious similarities between Hitler's avowed aims and those of his erstwhile nationalist allies. The Führer neither invented nor discovered the *Drang nach Osten*, nor militarism, nor the mystical conception of a Germanic civilizing mission among the Slavic and eastern peoples. These aims were the common heritage, not only of Hitler's National Socialists, but of many non-Nazi German nationalists. Schleicher's *Zähmungspolitik* was merely one example among many which illustrated the commonalities between the Nazis and the traditional German nationalists. On the other hand, there were limits to the old German expansionism, militarism, and mystical evangelism. These limits were never precisely defined, but for the most part, they were certainly more restricted than were Hitler's. Moreover, the traditional German nationalist viewpoint saw war as an extension of diplomacy, not as its substitute. War was a contingent and not a necessary condition for fulfilling German aims. To the extent that Hitler's expansionism was identical with the traditional nationalist expansionism, the Führer received the backing and active support of the old guard. Hitler, however, differed from his non-Nazi collaborators on both the means and goals which transcended, or were not included among, those of the Treaty revisionists and traditional nationalists.

Hitler invoked a geopolitical doctrine which transcended the older, nineteenth century idea of a national in-gathering of the Germanic peoples scattered throughout eastern Europe—an in-gathering to be achieved by moving Germany's state boundaries east, rather than by moving the diasporic *Volksdeutschtum* west. Hitler's ideological dogma called for the conquest of European Russia, not for ethnic reasons, but for reasons of space and power. Hitlerian *Lebensraum* sought to justify itself on the grounds of population numbers and geopolitical considerations rather than on ethnic dispersion. Furthermore, unlike many old imperial statesmen, Hitler renewed the idea of a drive to the west as a basis for his expansionism. France was a hereditary enemy who would have to be defeated only because she would oppose Germany's drive to the east. The Führer was opposed to overseas colonial expansion and to competition with England and the United States for sea power supremacy. In these respects, the Nazi leader's aims differed in important ways from the traditional pre-Weimar German policy goals.

Hitler's personal impact on Germany's foreign relations during the early months of his Chancellorship may be described as follows: the Führer took a direct and active part in articulating foreign policy; on several occasions, his views were opposed by traditional German nationalists, whom he over-ruled. Hitler not only abandoned Stresemann's policy of fulfillment—a policy to which his nationalist colleagues at least paid occasional lip service prior to his accession—but the dictator rejected measures proposed by his nationalist collaborators who hoped to win some advantages over Western statesmen by means of treaty revision through negotiation. In almost every instance where Neurath objected to Hitler's *modus procendi*, he did so because he believed Hitler's actions would make negotiations difficult. The Führer displayed a capacity to outrage foreign public opinion to a degree which was unknown to his nationalist colleagues—many of whom, including Schleicher, had demonstrated, in their own modest fashion, their disregard for foreign susceptibilities. Even they were appalled by Hitler's excesses.

Prior to Hitler's coming to power, Rumbold had correctly anticipated a more

forward pursuit of Germany's foreign policies as a result of the increased nationalism reflected in the 1930 Reichstag elections. After his accession, most diplomatic observers noted and evaluated in a similar fashion the course of Hitler's foreign relations. The foreign officials were almost uniformly pessimistic in their prognoses; they had read and absorbed *Mein Kampf*. The diplomats related Hitlerian programmatic dogmatism as expressed in *Mein Kampf* and the speeches of Nazi leaders to the future prospects for peace in Europe. American observers were uniquely well-informed about the results of German military preparedness plans which were decided upon in early May 1933. To most observers it looked as if Hitler would be able to stay in power; the intentions and actions of the Führer appeared unmistakably plain to most diplomats—the Nazi chieftain was girding Germany's loins for another military confrontation with the democracies, another attempt to undo Germany's humiliation in World War I. The diplomats were under no illusions about the prospects for European peace; they considered Hitler to be drastically different from his predecessors. A recurrent theme expressed by diplomatic observers who met and had social dealings with Hitler was the readily apparent abnormality in the dictator's behavior. Several foreign officials from different countries remarked on Hitler's compulsive speechmaking in private, has trance-like behavior while indulging in his harangues, and the fanaticism with which he discussed the subject of Jews.

In October 1933, by withdrawing from both the League and the Disarmament Conference, Hitler demonstrated his desire to alter the entire context in which his foreign policy goals would be pursued. On November 2, 1933, the Führer gave the German public a categorical reaffirmation that he had not altered his foreign policy goals:

> I did not become Chancellor of the Reich to do other than what I have been preaching for the last fourteen years.

And what had Hitler been preaching for the last fourteen years? By October 1933, the German dictator had already abandoned the Lord and the League; the third part of his sermon in *Mein Kampf* remained to be achieved:

> It must be thoroughly understood by this time that the lost territories will never be won back by solemn appeals to the good Lord nor by pious hopes in a League of Nations, but only by force of arms.

THE BIOLOGY OF RICKETTSIALIKE MICROORGANISMS

by EARL CARLYLE SUITOR, JR.*

Our present knowledge of the microorganisms which have been loosely grouped beneath the mantle of "rickettsia" is almost exclusively confined to the pathogens of man. Far more numerous, and possibly more important in the evolution of intracellular parasitism, are those which have remained just symbiotes or pathogens of arthropods and have not invaded vertebrates. These agents have been given only cursory study to date, and it was with the hope of better understanding their true nature and of better fitting them into the microbiological world that this work was undertaken.

Three approaches have been made to this investigation. The relationship of the rickettsialike symbiote *Wolbachia persica* to its host, the tick *Argas persicus*, constitutes the first approach; the second deals with the biological properties of *W. persica;* and the last reports propagation in cell culture of members of the genus *Rickettsiella*, which are rickettsialike microorganisms pathogenic for insects.

The first approach was concerned with the host-parasite relationship of *W. persica* and *Argas persicus*. In microscopic observations made on untreated male or female *Argas persicus* specimens from herons, the rickettsialike microorganism *W. persica* has always been found in the Malpighian tubules, often in the reproductive organs, but never in the cells of the gut. Isolations of this agent in embryonated hen's eggs could be made from ticks parasitic on herons in more than 60 per cent of the efforts. Although seven other species of this genus of tick as well as ticks from several other genera often showed *W. persica*-like agents in their tubules, isolation attempts from these failed. Surprisingly *W. persica* could not be isolated from *Argas persicus* parasitic on chickens obtained from Egypt, South Africa, or Maryland. Furthermore, when ticks parasitic on herons in nature were fed on chicks in the laboratory, isolations in embryonated hen's eggs of *W. persica* could no longer be made. This was also true of their first- and second-generation offspring reared in the laboratory by repeated feedings on chicks. Despite this failure, microorganisms morphologically identical to *W. persica* and antigenically indistinguishable from this agent, as determined by the fluorescent anti-body technique, were detected in their tubules. This observation led to testing the effect of feeding upon herons *Argas*

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persicus that were naturally parasitic on chickens. The results of this test were quite successful: isolations were readily made from chicken-parasitic ticks that had been fed on herons. It was found that *W. persica* could be eliminated from the tubules of heron-parasitic *Argas persicus* but not those parasitic on chickens, by holding the ticks for 25 days at 40 C. In neither case were the reproductive organs cleared of the symbiotes. First generation laboratory-reared ticks derived from those with tubules cleared of the agent likewise had tubules free of *W. persica*.

No reinfection of the tubules was possible by microinjection or feeding the ticks upon infected chick embryos. However, by the latter method, the guts of the ticks became heavily populated with *W. persica* as seen by microscopic examination. Since ticks with tubules free of *W. persica* were not obviously harmed by the loss of microorganisms, nor were they harmed when their guts were infected, the thesis that a commensal relationship exists between the tick and the microorganism is further substantiated.

The second approach to the study of rickettsialike microorganisms, consisted of an investigation of the biological properties of *W. persica*. This microorganism shares many characteristics with ordinary bacteria, rickettsia, and large viruses, but exhibits features that are clearly unique. It has failed to grow in all of the artificial mediums tried, including those designed for fastidious bacteria, pleuropneumonialike organisms, L-forms of bacteria, and *Rickettsia quintana*. Nevertheless, its mode of division, as observed microscopically at early stages of infection in chick entodermal cell cultures, is probably simple binary fission. It is postulated that the coccoid forms elongate into short rods, which divide by binary fission and revert to coccoid forms. In bacteria, penicillin and D-cycloserine are found to have similar effects. However, D-cycloserine did not affect infectivity or morphology of *W. persica*. Penicillin, on the other hand, when added to *W. persica*-infected chick embryo entodermal cell cultures caused the formation of elongated and swollen forms. The effect upon *W. persica* of surface active detergents was measured by the reduction of chick embryo infectivity of *W. persica* after *in vitro* incubation of the agent with the test detergent. Cationic detergents were found to have a considerably greater inactivating effect than anionic detergents, a property in common with feline pneumonitis virus. But, unlike some agents of the psittacosis-lymphogranuloma venereum-trachoma group, *W. persica* is not affected *in vitro* by the antibiotics polymyxin or bacitracin. Rapidly exposing the agent to low osmotic pressures, i.e., osmotic shock, caused *W. persica* to lose about 90 per cent of its infectivity and morphological integrity. Further rupturing could not be obtained by repeated osmotic shocks, lengthy exposure to low osmotic pressures, or related methods. The organisms resisted the disintegrating effect of sonic vibration at 10 KC for about one hour. This disintegration was very greatly enhanced by addition of small glass beads. For example, a reduction in chick-embryo infectivity of approximately 100-fold was obtained in five minutes. Without sonication, the glass beads brought about rapid rupture of the coccoid bodies if violently shaken with suspensions of *W. persica*. By this method approximately a 10,000-fold loss in chick-embryo infectivity occurred in five minutes. Although fairly stable under conditions of rapid freezing and thawing when suspended in a buffered sucrose solution, *W. persica* was rapidly inactivated by these conditions when suspended in distilled water. Electron micrographs of ultrathin

sections of *W. persica* in infected yolk sacs of chick embryos show that it is spherically shaped, and approximately 0.7 mu in diameter. The agent has granular, vacuolated cytoplasm and a limiting envelope approximately 13 mmu thick with no definite division into wall and membrane. The envelope does not morphologically resemble the typical rigid wall-membrane complex of bacteria. Thus, the results of the biological and morphological studies described indicate that *W. persica*, in comparison with other microorganisms in its same size range, has a unique cell wall.

The third approach to this study concerns two other rickettsialike microorganisms, *Rickettsiella popilliae* and *R. melolonthae*. Unlike *W. persica*, these are definitely pathogenic to their insect host, and have not been previously cultivated *in vitro*. Limited growth of these agents was obtained in McCoy and chick embryo entodermal cells grown at 32 or 28 C. The rickettsialike rods, which tend to elongate at the lower temperature, were first seen in the cells about one week after inoculation and were readily recognized after two weeks. Growth of *R. popilliae* in McCoy cells was confirmed by demonstrating upon subculture into new McCoy cells progressive increase in titers between the second and fourteenth day of infection. The inoculum, containing 10^8 particles, was not infectious for McCoy cell cultures if diluted more than 10^{-3}. During serial passage, infectivity was reduced progressively, and no growth in McCoy cells was demonstrated after five passages. No growth of the agents was observed in L, monkey kidney stable, or rainbow trout gonad cells, embryonated hen's eggs, or a variety of artificial mediums. Although much work still needs to be done with these agents, this study represents a promising beginning.

Wolbachia persica and the *Rickettsiella*, although grouped together taxonomically as rickettsialike microorganisms found in arthropods, appear to have marked physiological differences and may well serve to illustrate the type of problems we can expect to encounter when studying these types of microorganisms.

SUMMARY OF DISSERTATION
SUBMITTED FOR THE
DEGREE OF DOCTOR OF JURIDICAL SCIENCE

STATE TAXATION OF GOVERNMENT CONTRACTORS

by KARL EVERETT WOLF*

Immunity of the federal government from state taxation is implied from various clauses of the Constitution including the supremacy clause, the government property clause, the necessary and proper clause, and the exclusive jurisdiction clause in the case of property located in federal enclaves.

Until around 1930 the emphasis in the Supreme Court cases was on immunity from taxation and prevention of tax burdens interfering with the exercise of governmental functions. The trend of the cases then gradually shifted to a curtailment of the federal government immunity concept. In recent years the implied governmental immunity concept has been limited to preventing undue interference with the federal government in the performance of its functions. While the early cases paid little attention to discrimination in the state taxing statutes, the more recent cases have placed increasing emphasis on the requirement that states do not without adequate justification single out those dealing with the federal government for the imposition of property or sales and use taxes which are not imposed upon others dealing with the states or political subdivisions.

It is now a generally accepted principle that, in the absence of congressional action, the instrumentalities, property, and operations of the federal government are immune from taxation by state and local governments. Congress may waive this implied governmental immunity from state taxation. Congress may vitiate its waiver and reinstate the federal immunities from state taxation beyond that which would be implied from the Constitution.

Government instrumentalities which are completely immune from direct state taxation include all government departments which are part of a branch of the Government. Also included in these totally exempt instrumentalities are agencies which are established by Congress or by a government department not as a specific department in a branch of the federal government but as a government agency or government corporation solely to effect a governmental purpose or to perform a function of the Government without private profit.

Taxation is permitted of the property but not of the operations of privately-owned corporations organized under authority of Congress to carry out a federal purpose even when they are also interested in profit for their own account. Performance of a government contract does not create tax immunity for the property or the

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operations of a contractor, unless there are special terms in the contract which attempt to make him an agent of the Government.

Real and personal property owned by the federal government and within the control and possession of its departments and agencies is immune from state and local property taxes. The government agencies whose property is exempt include those corporations which are organized under state laws pursuant to an act of Congress and whose property is conveyed or bought by the United States and used for a governmental function without profit. Not included within the exempt categories are government instrumentalities, such as federal banks, which are privately owned and interested in profit for their own account.

The tax immunity accorded federal lands and personalty may be, and in some cases has been, waived by Congress. Tax immunity of federal property terminates when the property is conveyed or sold and the equitable title is fully vested in its purchaser. The privilege of using real property of the federal government may be taxed when the property is used for profit by a contractor or private party under a lease or mere permit arrangement regardless of whether the use or possession of the federal property by the lessee or permittee is in connection with government or private business. The measure of such a possessory use tax may be the full value of the property including the government's ownership interest. A contractor may also be taxed for his possession of materials, work in process, and inventories, the title to which is in the Government and which he is using in the performance for profit of a government contract. The state courts have held that before such possessory interest type taxes may be imposed there must be state enabling legislation authorizing taxing of such use or possession to other than the owner of the property and for the value assessed. Any attempt to discriminate against the federal government by taxing only the lessees or users of federal property and without adequate justification not taxing, or taxing to a lesser extent, lessees or users of property of the state or local government makes such statutes or tax administration unconstitutional. The property owned by a government contractor and used in the performance of a government contract is not immune from nondiscriminatory state or local taxation. There is also no constitutional prohibition against a state or local tax upon the property of an agent of the federal government.

In the sales tax area it is now necessary to consider the legal incidence of a sales tax in determining its constitutionality when federal immunity is claimed. The legal incidence of a sales tax is considered to be upon the purchaser when the statute provides that the tax is required to be added to the sales price and collected from the purchaser; the tax is made a debt from the purchaser to the seller; the seller is required to remit to the state all taxes collected less expense of collection; the seller is prohibited from advertising that he will assume or absorb the tax; and the purchaser is allowed to recover illegally collected taxes. The final decision in determining whether the legal incidence of a sales tax is upon the purchaser or seller rests with the Supreme Court when federal immunity is involved. If a sales tax is imposed upon direct sales to the federal government the tax is valid if its legal incidence is upon the seller (vendor type) and invalid if its legal incidence is upon the purchaser (vendee type). Direct sales to the federal government are exempt from vendor type sales if the tax statute either specifically exempts sales to the

federal government or unlawfully discriminates against the federal government or its vendors. An exemption for direct sales to charities, religious organizations, and educational institutions without an exemption for sales to the federal government is lawful. If a contractor is considered to be an agent of the federal government, he is entitled to the same immunity from taxation which is accorded to the federal government in the sales tax area. If a government contractor is not an agent of the federal government, sales by a supplier to such a contractor are taxable unless there is a statutory exemption for sales for resale or for sales of materials used in manufacturing or there is discrimination against contractors of the federal government.

In the complementary use tax area the tax status of transactions involving the federal government and its contractors rests upon the terms of the tax statutes involved and whether their effect would be to tax the instrumentalities or operations of the federal government. A complementary use tax may not be imposed upon the federal government or its agents for the use of property purchased. A government contractor who is not an authorized government agent is not immune in the performance of a contract from a complementary use tax imposed upon his use of property which he purchases out of state, becomes the owner of, and then uses in the state without paying a sales tax upon such purchase. Constitutional implied immunity of the federal government prohibits unlawful discrimination against the federal government in such a situation. Where a federal contractor purchases property out of state in the performance of a federal contract with title passing directly to the federal government from the vendor he is immune from a use tax if he is an agent of the federal government. If he is not an agent of the federal government and the use tax statute authorizes a tax upon use or possession alone, without regard to ownership, a use tax may be imposed upon his purchases in such a situation. If the use tax statute imposes a tax upon use incident to ownership, a use tax may not be imposed upon a contractor under such circumstances, since with title passing directly to the Government there would be no use incident to ownership to be the basis of the tax. The implied federal immunity doctrine prevents discrimination against contractors of the federal government in use tax statutes.

If the federal government exercises exclusive legislative jurisdiction over the area in which a contractor is performing his contract, the personal property of the contractor located in the area is immune from taxation. State sales, use, and income taxes may be applied in such an area as the result of enabling legislation enacted by Congress.

The treatment of state and local taxes by contract clauses required in government contracts has varied considerably over the years. The tax clause currently required to be inserted in formally advertised defense contracts (also in some negotiated fixed price type contracts) provides that the contract price include all applicable federal, state, and local taxes and duties but contains no provision for a contract price adjustment for any increases or decreases in state and local taxes.

The tax clause currently required for use in all negotiated federal fixed price type contracts in excess of $10,000, where the contracting officer is not satisfied that the contract price excludes contingencies for state and local taxes, indicates that all state taxes applicable to the contract or the transactions covered by the contract are to be included in the contract price, but there is no requirement that all other taxes

must be excluded. It is provided that if the contractor is required to pay or bear the burden of any tax which was not to be included in the contract price pursuant to the requirements of the clause the contract price shall be increased by the amount of such tax allocable to the contract. Similar escalation is provided where the contractor is required to pay or bear the burden of an increase in rate of any tax whether or not such tax was excluded from the contract price. It is also provided that if the contractor is not required to pay or bear the burden or obtains a refund of any tax which either was to be included in the contract price pursuant to the requirements of the clause, or was included in the contract price, the contract price shall be decreased or refund made to the Government in the amount of such relief or refund allocable to the contract.

There is no specific tax clause required in a cost reimbursement type supply contract. The question of allowability of state and local tax costs is covered by the Cost, Fixed Fee, and Payment clause set forth in ASPR 7-203.4 providing that for the performance of the contract, the Government shall pay to the contractor the cost thereof determined to be allowable in accordance with Part 2 of Section XV of the Armed Services Procurement Regulation. Section 15-205.41 of ASPR provides concerning taxes that taxes, including state and local income taxes, which the contractor is required to pay and which are paid or accrued in accordance with generally accepted accounting principles are allowable. Specifically not allowed are taxes in connection with financing operations, taxes from which exemptions are available to the contractor, special assessments on land which represent capital improvements, and taxes on any category of property which is used solely in connection with work other than on government contracts.

There are many methods by which a contractor may utilize authorized government procurment procedures to reduce his state and local tax costs.

In the property tax area the title passing provisions of the progress payments and government property clauses of defense contracts permit a tax savings. These title vesting clauses provide in effect for passage of title directly to the Government from the contractor's vendors without title ever vesting in the contractor. If title never vests in the contractor on his purchases covered by the contract, a state or local ad valorem property tax could not be imposed upon such property after purchase by the contractor since the ownership would be in the Government upon tax day.

A contractor may avoid the impact of some possessory interest taxes upon use of government property by placing such property in a government property storage area until it is actually required in the manufacturing operations. While so stored it possibly would not qualify as property being used in connection with a business conducted for profit within the terms of a possessory interest tax statute.

It is advisable for all contractors to have the exact arrangement whereby they are entitled to use federal real property spelled out in writing. If such arrangement is the usual permit or license it would not be subject to a tax under a statute which requires possession of the premises under a claim against the world including the owner.

In states permitting taxation of the use of tax exempt property, any federal contractor who is being taxed for such use should insist that the taxing jurisdiction allow depreciation of such property at the same rate and to the same extent as is afforded any private owner of property.

Tax savings devices are also available to the contractor in the sales and use tax area. If a state imposes a tax upon or as the result of sales to the Government a contractor may reduce such a tax burden by a proper selection of delivery points in the case of low weight, high dollar value items. By selecting a delivery point out of state such a tax would not apply.

By the proper use of the title passing provisions of the progress payments and government property clauses which result in passage of title directly to the Government from the contractor's supplier without title ever vesting in the contractor, a tax savings may be possible. If title never vests in the contractor on his purchases covered by the contract, neither a state sales tax which is imposed upon a transfer of title of tangible personal property for a consideration nor a state use tax which is imposed upon use incident to ownership could be applied to such purchases by the contractor.

Cost type contractors may be immune from taxation upon their purchases in some states because considered to be agents of the federal government in making purchases of equipment and facilities pursuant to a government facilities contract. As agents of the federal government such contractors are entitled to the same immunity from sales and use taxes which is accorded the federal government.

If a research and development contractor is required to deliver products of experimentation in the form of tangible personal property rather than just engineering services in the form of engineering reports, a tax savings may be possible on items purchased by the contractor in performing the contract. If the contract requires the delivery of hardware, such as experimental missiles, the materials incorporated therein would fall squarely within any exemption from sales and use taxes for the sale of tangible personal property incorporated as a part of other property produced for sale by manufacturing, assembling, or processing. Whether a contract requires hardware or engineering services from a contractor is also extremely important in states which tax sales of services to the Government but exempt sales of tangible personal property to the Government.

Firms involved in construction work for the federal government may be able to secure tax reduction benefits as the result of tax benefits accorded time and material contracts in some states. Four states recognize that where the contractor contracts to furnish the material and supplies at a fixed price and to render services in connection therewith either for an additional agreed price or on the basis of time consumed, the sale to the contractor of materials and supplies is for resale and not subject to tax.

Construction contractors of the federal government in the states of Maryland, Michigan, North Carolina, and Iowa should be able to avoid the payment of state sales and use taxes imposed upon their purchase of materials because of unlawful discrimination against federal contractors resulting from exemptions or refunds provided only in the case of sales to construction contractors of the state or political subdivisions.

In conclusion while the law on state taxation of government contractors is comparatively certain, much depends upon the particular provisions of the respective state tax statute involved, and much more depends upon what action the contractor takes to take advantage of the tax savings benefits available.

SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF EDUCATION

PROFESSIONAL RELATIONS OF STATE LEADERS IN VOCATIONAL AGRICULTURAL EDUCATION

by HOWARD PALMER HOPKINS*

THE PROBLEM

The purposes of this study were to: (1) identify the activities used by state leaders of vocational agriculture teachers to promote better professional relations with school administrators and state leaders of other agencies and organizations dealing with farm people, (2) determine differences in the activities used by state leaders of agriculture teachers in the various regions of the United States, and (3) make recommendations for the improvement of these activities.

PROCEDURE

The study was conducted by a questionnaire designed to find what practices and procedures were being used by state leaders in agricultural education in their professional relations and the degree of effectiveness of these techniques. The questionnaire was made with the assistance of the agriculture teacher trainers and supervisors of the North Atlantic Region. It listed 116 professional relations practices being used. The respondents were asked to indicate the extent to which the practices were used and the effectiveness of each.

A copy of the questionnaire was mailed to each head state supervisor of vocational agriculture and to each head teacher trainer in colleges and universities where agriculture teachers are trained. They were asked to report for their entire staffs.

Completed questionnaires were returned from 45 state supervisors and 41 head teacher trainers. This represented 90 per cent of the total population of 501 state leaders of vocational agriculture teachers.

The data were organized and analyzed to show the extent of use of various professional relations practices in each of the six regions of the United States. The data were treated statistically with chi-square tables to determine whether there were any significant differences between the professional relations activities as conducted in the different regions of the United States.

The professional relations practices and procedures were arranged in rank order according to usage with (1) state school administrators, (2) local school administrators, (3) state leaders of nongovernmental organizations in agriculture, and (4) state leaders of governmental farm agencies.

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REVIEW OF THE LITERATURE

Research in literature revealed that the broad field of public relations in education has been extensively studied. However, the particular subject of this study, has seldom been treated alone. Rather, it has been included as a part, here and there, of the whole field of public relations. Public relations studies and articles concerning vocational agriculture generally have been concerned with the relationships between the teacher of agriculture and those with whom he works. Practically no attention has been given in literature to the role of state leaders in vocational agricultural education in fostering better public relations. No previous studies have dealt with improving the relationships between the leaders in the various agencies involved in agricultural education.

FINDINGS

The study identified 116 activities being used regularly and successfully by one or more state leaders of agriculture teachers to promote improved relations with four specific groups of other professional leaders. The activities were divided into four categories, namely: (1) twenty-four were used with state school administrators; (2) twenty-four were used with local school administrators; (3) thirty-two were used with state leaders of nongovernmental organizations; and (4) thirty-six were used with state leaders of governmental farm agencies.

The most-used activities in each of the above four categories were tabulated and listed in rank order. The activities used regularly or frequently by more than 40 per cent of the respondents are listed below in order of frequency of use in each category. If the use of an activity for a particular geographic division was significantly higher or lower, measured by the chi-square test, than for the United States as a whole it is indicated in parenthesis.

Practices and procedures used regularly or frequently by more than 40 per cent of respondents with state school administrators:

Handle all matter through proper administrative channels

Be informed of policies and regulations of state school administrators and observe them

Exhibit interest in all phases of the school program

Keep in touch with them through personal contact and conferences

Invite them to participate in agriculture teacher conferences and workshops (High—Northeastern states)

Keep them informed of major developments in the field of agricultural education

Be prompt and accurate in submitting reports they request (High—West North Central states; Low—East North Central states)

Solicit criticisms of the agricultural program and suggestions for improvement

Invite them to attend and participate in state FFA affairs

Send them copies of newsletters and other informative reports and publications

Send them copies of programs of FFA affairs such as conventions and contests

Consult with them in arranging for workshops, conferences, and technical assistance for agriculture teachers (High—West North Central states)

Be prompt in attending staff meetings they may call

Recognize publicly and privately their worthwhile accomplishments

Attend annual meetings of state superintendents and principals

Assist other areas of the total school program

Coordinate visitation schedules to Vo-Ag departments with other supervisors

Publicly recognize their support of agricultural education by awarding the honorary State Farmer degree

Consult with them in arranging state FFA events (High—Western states)

Recommend to them candidates for positions in state staff when requested

Practices and procedures used regularly or frequently by more than 40 per cent of respondents with local school administrators:

Exhibit a friendly, sympathetic interest in their total school program

Call at their office upon arrival at school

Keep them informed through newsletters and other informative materials

Confer with them after supervisory visit with teacher or trainee (Low—West North Central states)

Be available for assistance whenever called upon

Inform them of policy and administrative matters through the proper channels

Keep in touch with them through personal contact and conferences

Confer on cooperative responsibilities of local and state staffs in supervision

Advise them in advance of supervisory visits

Participate with them in school evaluations and Vo-Ag department evaluations

Appear on program at local teachers meetings when invited

Confer with board members, administrators, and advisory lay groups when requested by administrators

Invite them to attend state and regional FFA contests and conventions

Send them letters after supervisory visits

Send them copies of letters to Vo-Ag teachers when pertinent

Encourage teachers to arrange for area or county meetings of Vo-Ag teachers, administrators, and state Vo-Ag personnel

Invite them to attend state and regional meetings and conferences of Vo-Ag teachers

Publicly recognize their support of the agricultural program by awarding the honorary State Farmer degree

Publicly and privately recognize and recommend them for their accomplishments

Hold meetings at University with local administrators, Vo-Ag teachers, and teacher trainers before practice teaching begins (High—Northeastern states)

Attend and participate in annual conference of secondary school principals and superintendents

Invite them to act as judges in state FFA activities

Practices and procedures used regularly or frequently by more than 40 per cent of respondents with state leaders of nongovernmental farm organizations:

Encourage teachers to utilize the services of farm leaders in their local program

Attend state and regional fairs and farm shows (Low—Northeastern states)

Try to be a "good listener"

Keep informed by writing for subscriptions and reading farm organization magazines

Cooperate in planning and carrying out worthy youth projects sponsored by farm organizations

Accept committee appointments concerned with youth and education

Utilize all opportunities for personal contact and conferences (High—Southeastern states)

Keep leaders informed of new policies and developments in agricultural education

Exhibit sincere interest in all their problems

Accept invitations to participate in their programs at meetings and conferences

Invite leaders to attend state FFA convention and banquet

Be represented on state farm safety council

Encourage teachers to participate actively in farm organizations

Give public recognition to leaders who merit it by awarding the honorary State Farmer degree

Keep leaders informed on steps they may take in support of vocational agriculture program (High—Southwestern states)

Invite leaders to act as judges for FFA events

Invite leaders to attend Vo-Ag teachers conference (High—Western states)

Keep the Vo-Ag teachers informed concerning the youth and education activities of the farm organizations and their leaders

Place them on mailing list to receive agricultural education newsletters and other informative materials (High—West North Central states)

Invite leaders to participate on program at Vo-Ag teachers conference

Select outstanding FFA members to participate in state meetings of farm organizations

Invite leaders to serve on agricultural education committees

Be represented on state council of agriculture leaders

Help plan and carry out details of awards and contests subsidized by farm organizations

Attend most of their major activities

At least one member of the staff attend all state farm organization meetings and conferences

Be active in adult council of rural youth organizations

Hold active membership in most of the major farm organizations

Make it a point to attend one of their major activities occasionally

Practices and procedures used regularly or frequently by more than 40 per cent of respondents with state leaders of governmental agricultural agencies

Encourage Vo-Ag groups at all levels to make use of the services of the various agencies

Keep in touch with them through personal contacts and conferences

Accept invitations to attend their annual conferences

Try to be a "good listener"

Accept invitations to attend special meetings and affairs they may sponsor

Exhibit sincere interest in their programs and accomplishments

Provide them with mailing lists of Vo-Ag teachers

Help in the distribution of agricultural agency literature to Vo-Ag teachers

Invite representatives to attend state FFA convention and banquet

Encourage Vo-Ag teachers to have leaders appear before their classes and FFA meetings

Invite leaders to act as judges for FFA contests

Invite them as guests to agricultural education conferences

Publicly recognize the contributions of agricultural agencies to vocational agriculture by awarding honorary State Farmer degree to leaders

Keep the Vo-Ag teachers informed concerning the programs of agricultural agencies, and urge support

Cooperate with the extension service in carrying on youth activities that promote the programs of both the 4-H and FFA organizations

Invite them to participate on programs at agricultural education conferences

Invite personnel from agricultural agencies to speak to Vo-Ag teachers meetings

Pay a courtesy call when a new head is appointed

Keep agricultural agency leaders informed about the Vo-Ag program

Accept invitations to participate on programs at their meetings

Cooperate with other agencies in their efforts to conduct worthwhile youth activities

Cooperate with the various agencies in conducting state fairs and shows

Invite leaders to participate on programs at FFA convention

Invite personnel from agricultural agencies to speak to agricultural education classes

Assist agencies in preparing teaching materials to be used in schools

Have a staff member serve on advisory committees of state agricultural agencies when invited

Send newsletters and other informative materials to heads of agricultural agencies

Assist in carrying out the programs of the various agencies

Attend meetings of state council of agricultural leaders (High—Northeastern states)

Cooperate with agricultural agencies in arranging interviews with prospective employees

GENERAL CONCLUSIONS

There were many common professional relations activities being used by most of the state leaders of agricultural education. Eighty-four practices and procedures were identified as being used regularly or frequently by 50 per cent or more of the respondents.

There were many individual differences in the approach to professional relations. Thirty-four practices used regularly by one or more respondents were used only occasionally, if at all, by most of the other respondents.

There was a greater uniformity in the approach to professional relations with school administrators than with state leaders of farm organizations and agencies. It

seemed evident that the state leaders of agricultural teachers had given much study to the problems of working relations with school administrators. Several of these practices were used by more than 90 per cent of the respondents.

There was a particularly noticeable lack of standard practices in the area of relations with state leaders of nongovernmental organizations. Of the 32 practices identified, not one was used regularly by as many as two-thirds of the state leaders of agriculture teachers.

There were relatively few differences in the professional relations practices used in the various geographic regions of the United States. Although there were great individual differences between states, there were only 15 instances out of a possible 736, in which significant differences between regions could be established. It can be safely concluded that whatever practices are successful in one section of the country should be seriously considered for any other section.

Some of the significant differences between regions may be explained by new practices originated in one region and not yet known or tried in the other regions. The differences may also reflect basic variations in the regions that require unique approaches.

RECOMMENDATIONS

Each state leader of vocational agriculture teachers should be made aware of the 116 professional relations activities identified in this study and the extent to which they are being used.

Each activity should receive serious consideration for adoption, particularly those enjoying a high degree of usage by other state leaders of agriculture teachers.

Professional relations activities showing significant differences between geographic regions should be studied carefully to see if a wider application is merited. Additional research is needed to determine whether the successful patterns could be advantageously adopted in other areas.

It is recommended that future studies in this area of professional relations of state leaders of agriculture teachers be divided into two groups, namely: (1) state supervisors of agriculture education, and (2) teacher trainers of agriculture education. It was evident from this study that these two groups had different methods of achieving satisfactory professional relations.

CONCLUDING STATEMENT

This study achieved its major objective of identifying a large number of activities being used by state leaders of agriculture teachers to promote improved relations with other state leaders who work toward the education of farm people. It also found the degree to which such practices were being used and the differences in usage among the various regions of the United States. It is recommended that the results be studied in regional workshops and conferences to promote increased usage of successful practices.

Not identified from this research project were the reasons for differences between regions of the United States nor, for that matter, individual differences between state leaders of agriculture teachers. Left to future researchers also was the problem of identifying the differences between state supervisors and teacher trainers in their respective approaches to problems in professional relations.

SURVEY AND ANALYSIS OF CERTAIN CHARACTERISTICS OF SMALL HIGH SCHOOLS IN THE UNITED STATES

by DAVID IWAMOTO*

THE PROBLEM

The purpose of this study was to discover and analyze certain characteristics of the nation's small high schools (schools with fewer than 300 enrolled) by means of questionnaires sent to a sample group of principals and classroom teachers in small high schools. The study covered basic information in the following areas: (1) general information—number of schools, enrollment, locations, and accreditational status of small high schools; (2) personal and professional information about the principals and classroom teachers; (3) certain information about students, including post-graduation status of the June 1960 graduates; (4) the curriculum; (5) central school and community resources; (6) school buildings and facilities; and (7) availability and adequacy of certain instructional materials and equipment.

PROCEDURE

The following steps were taken in this study:

The literature concerning small high schools was reviewed, and from it standards for certain characteristics of small high schools and the questionnaire to assess the status of these characteristics were formulated. To improve the questionnaire, the writer visited small high schools in Virginia, West Virginia, and Maryland. The questionnaire was also criticized and reviewed by the advisers and consultants of this study.

Names and addresses of all small high schools in the United States were obtained from the National Association of Secondary School Principals, a department of the National Education Association. A six-page questionnaire was sent to a structured sample of 1,400 principals of small high schools and a two-page questionnaire was sent to 1,400 classroom teachers systematically selected from all the classroom teachers in the sampled high schools. After three follow-ups, 88 per cent of the principals' questionnaires and 85 per cent of the classroom teachers' questionnaires were returned. The number of returns gave the findings a confidence limit of .90 and a degree of error of .05.

The findings of this study were analyzed according to three enrollment groups:

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smallest of the small high schools, fewer than 100 students; medium-sized small high schools, 100–199 students; and the largest of the small high schools, 200–299 students. Since the comparison between the smallest and the largest of the small high schools was the sharpest, most comparisons based on size were made between these two groups. The findings by school size have a confidence limit of .90 and a degree of error of .05.

The findings of this study analyzed by school accreditational status also have a confidence limit of .90 and a degree of error of .05.

REVIEW OF THE LITERATURE

The review of literature showed, almost from the establishment of the first high school, differences of opinion among both educators and lay persons regarding the relative values of small high schools. Some have believed that the problems of education in small high schools could best be solved by abolishing the very many small schools through consolidation and reorganization. Others have believed that the small rural school can provide as good an educational experience for the rural child as can a large school. They further have pointed out that small schools are a means of keeping the vital function of education near the home and of maintaining a "community center" within easy reach of every home.

The American approach to this problem has been (1) school consolidation with emphasis on finding ways and means to preserve some of the close contact with students that small size makes possible, and (2) keeping the small high school and finding ways and means of organizing and operating the schools to meet the educational needs of the students.

Surveys—whether national or local in scope—show most principals and classroom teachers of small high schools to be less well trained and less experienced than the principals and teachers of large high schools.

Many studies of college grades of students from large and small high schools are available, but the findings do not agree. A small number of studies found the graduates of small high schools making better grades in college than graduates of large high schools; a large number of studies found no differences in the college grades earned by graduates of small and of large high schools; and a larger number found graduates of large high schools making better grades than graduates of small high schools.

The review of literature concerning subjects offered in small high schools showed that the program in small high schools is extremely limited, traditional, poorly arranged, and ill-balanced, and that small high schools are seldom able to provide a curriculum which extends much beyond academic subjects.

The review of surveys showed that generally, materials, facilities, and services are poorer in small high schools than in large schools.

The strengths of the literature reviewed may be said to be the following: (1) *The National Survey of Secondary Education*, published by the U. S. Office of Education in 1932, was the most nearly complete available source of information on small high schools; (2) the biennial reports of the U. S. Office of Education covering the number, size, staff, and enrollment in small high schools offered the most

current information on the nation's small high schools; (3) many reports on the various characteristics of small high schools were available, but they were limited geographically; and (4) relatively current national surveys of the characteristics of principals, of teachers, and of courses of science, mathematics, and foreign languages in small high schools were available.

The weaknesses of the literature may be said to be the following: (1) a current and detailed national study of small high schools is not available; (2) fragmentary studies of small high schools were often reported in terms of secondary schools, including junior high schools, and the data, therefore, were not comparable with those for high schools only; (3) the definitions of "small high school" differed, thus making comparisons of studies impossible; and (4) surveys of certain characteristics of small high schools, such as availability and adequacy of instructional materials and equipment, adequacy of school buildings and facilities, and availability of subjects in vocational and industrial arts, fine art, and music, were not available.

FINDINGS

In 1958–59, there were 19,280 high schools in the United States, and about 57 per cent of this number were small high schools: 18.7 per cent with enrollments of 1–99, 23.5 per cent with enrollments of 100–199, and 15.1 per cent with enrollments of 200–299. Small high schools accounted for 13 per cent of all high school students and 21 per cent of all high school classroom teachers. About 94 per cent of the small high schools were in communities of less than 10,000 population, including 71 per cent in communities of less than 2,500 population.

The typical (average) prinicpal of a small high school is a man, 42 years old, who holds a Master's degree, and has 16 years of school experience. He works 56 hours a week and is paid $6,221 a year. His high school enrolls 145 students, and he has a staff of nine classroom teachers, one part-time librarian, one part-time secretary, and one full-time custodian. He did not conduct any in-service training for teachers in 1960–61, but he did hold a preschool workshop and called an orientation meeting for new teachers. He believes that consolidation of his school with the nearest high school, about 10 miles away, would be wise, but the nearest high school is outside his school district.

The typical (average) classroom teacher in the small high school is a man 37 years old, who has a Bachelor's degree and 11 years of experience. He works 54 hours a week and is paid $4,755 a year. He teaches four different subjects from two subject fields, and his students are in four different grades. He teaches 88 students a day in five class periods, and sponsors two student activities. He considers the school buildings and instructional materials and equipment adequate. He is a member of the local, state, and national education associations. He admits not having sufficient time for guidance and counseling, for helping students who are behind in their work, or for holding conferences with parents during the regular school day.

In 1960–61, over one million high school students were enrolled in small high schools. About 35 per cent were pursuing a college preparatory course. The others

were in various curricula such as business education, industrial arts, and general courses.

The percentage of June 1960 graduates of small high schools attending college in March 1961, 33 per cent, was much higher than expected. Two-thirds of the June 1960 graduates of small high schools were no longer in their school communities by March 1961.

Almost all schools offered algebra, geometry, chemistry, and biology, and 80 per cent offered physics. The percentage of small high schools offering trigonometry, solid geometry, and foreign languages was not so high.

Almost all small high schools offered typing and bookkeeping, and 80 per cent offered shorthand. Not so good was the fact that 10 per cent offered accounting and 54 per cent offered general business.

Only 14 per cent of the small high schools offered art, but 68 per cent offered instrumental music and 72 per cent offered vocal music.

About 63 per cent of the small high schools offered one or more courses in industrial arts: 50 per cent offered general shop; 38 per cent, mechanical drawing; 38 per cent, wood working; 16 per cent, metal work; 8 per cent, electrical work; and 2 per cent, printing.

About 57 per cent of the small high schools offered one or more courses in agriculture. General agriculture was offered in 11 per cent of the schools and vocational agriculture in 50 per cent.

Home economics was offered in 84 per cent of the small high schools.

Intelligence and achievement tests were available in almost all small high schools.

Health examinations were available in 69 per cent of the small high schools, and school nurses were available in 64 per cent.

Parent-teacher associations or similar organizations were operating in 79 per cent of the small high schools. Their major functions were (1) to provide a two-way communication between parents and teachers concerning the school curriculum and school activities, (2) to inform parents about the school curriculum and school activities, and (3) to purchase equipment and supplies not furnished by the board of education.

About 20 per cent of the small high schools had an organized program that encouraged teachers to visit the homes of their students. About 75 per cent of the small high schools had an "open house" or "parent night" periodically.

Facilities of small high schools are frequently used by civic groups for non-school purposes. A median of three nonschool community organizations used the small high school buildings and facilities in February 1961.

The typical small high school building was estimated to be 28 years old in 1961. A great majority, 77 per cent, of the principals of small high schools considered their school buildings to be in an excellent or generally good condition in terms of what they need.

Ninety per cent of the small high schools had facilities for hot lunches; 96 per cent, a central school library; 63 per cent, a first-aid room; 80 per cent, a school gymnasium; 53 per cent, a teacher's lounge; and about 50 per cent, separate lavatory facilities for the faculty.

The average school library contained 2,149 books (the quality of these books was not determined). In those schools that did not have a school library, an average of 590 books were distributed to the classrooms. The small high schools spent an average of $530 on new books, other than textbooks, in 1959–60.

Almost all the schools had movie projectors, filmstrip or slide projectors, wall maps, and encyclopedias, but only 22 per cent had a television receiver.

A foreign language laboratory was available in 14 per cent of the small high schools, but this group included 7.5 per cent in which the principals considered the laboratory inadequate.

Almost all schools had biology, chemistry, and physics laboratories. Probably all these laboratories were in the same room. Almost one-third of the principals of small high schools considered these laboratories inadequate.

Almost all small high schools had a home economics room, but 15 per cent of the principals considered these rooms inadequate.

Surprisingly, 88 per cent of the small high schools had business machines (the type and number of machines were not determined). The percentage included 43 per cent in which the principals considered the machines inadequate.

While almost all small high schools were accredited by their state departments of education, only 26 per cent were accredited by a regional accrediting association. School size made a difference in the percentage of small high schools accredited. About 13 per cent of the smallest and 35 per cent of the largest of the small high schools were accredited by a regional accrediting association.

Generally, principals in accredited small high schools were paid higher salaries and held higher degrees than principals in nonaccredited small high schools. Accreditation made no difference (the difference was less than 5 points or 5 per cent) in the principals' average age, proportion of men and women principals, recency of education, average years of school experience, and the average number of hours spent per week on school duties.

Generally, class room teachers in accredited small high schools held higher college degrees, were paid higher salaries, and returned to college more recently, and a larger percentage of these teachers taught in only one subject field and taught subjects they were certified to teach than classroom teachers in nonaccredited small high schools.

Accreditation made no difference in the age or condition of the school buildings nor in the availability of such facilities as hot lunches, central libraries, and gymnasiums. The facilities in accredited small high schools were generally considered adequate by a larger percentage of principals than were the facilities in the nonaccredited high schools.

School accreditation made a difference in the percentage of students in a college preparatory course and in the percentage of June 1960 graduates who were in college in March 1961. A larger percentage of students in the accredited than in the nonaccredited small high schools were in a college preparatory course, 39 per cent and 33 per cent, respectively. Thirty-nine per cent of the 1960 graduates from accredited schools and 38 percent of the graduates from nonaccredited schools went to college the following fall.

Accreditation made no difference in the average number of weeks of school in

1960–61 or in the percentage of schools operating supervised correspondence courses, multiple classes, distributive education, or summer sessions.

A larger percentage of accredited small high schools than nonaccredited schools offered foreign languages, journalism, speech, solid geometry, trigonometry, chemistry, physics, home economics, bookkeeping, shorthand, general business, mechanical drawing, one or more courses in vocational or general agriculture, and vocal and instrumental music.

Accreditation made no difference in the percentage of schools offering English, American history, European history, world history, social studies, civics, algebra, plane geometry, biology, typing, accounting, office machines, general shop, woodwork, metal work, electrical work, general agriculture, and art.

Generally, subjects offered in small high schools were more frequently available every year in the accredited than in the nonaccredited small high schools.

CONCLUSIONS

The findings of this study imply the following conclusions:

1. The teacher-pupil ratio in small high schools shows that staffing the small high schools is expensive. Since by far the largest percentage of school expenditures goes to pay teachers' salaries, it also indicates a high per-student expenditure. When these facts are coupled with a small tax base, the problem of finding enough money to finance a good school system may become very difficult.

2. Generally, the characteristics of principals of small high schools compare well with those of all high school principals, but two differences stand out: (a) the principals of small high schools have little experience as full-time supervising principals and (b) their average salary is small.

3. Generally, the characteristics of classroom teachers in small high schools compare well with those of classroom teachers in all high schools, but two differences stand out: (a) classroom teachers in small high schools have heavy teaching loads (the average teacher taught four different subjects from two subject fields, and his students were in four different grades) and (b) their average salary is small.

4. The subjects offered in small high schools tend to be academic, yet only one-third of the students went to college. Two-thirds of the June 1960 graduates of small high schools were no longer in their school communities by March 1961. Many of these graduates had gone to the large cities in search of employment. Although the number of clerical and vocational offerings in the small high schools was unexpectedly high in the light of the needs of majority of their students, much more can be offered along this line.

5. With some exceptions, the academic subjects offered in small high schools compared well with those offered in all high schools, but the percentage of schools offering advanced subjects was generally smaller for the small high schools.

6. The number of subjects offered in industrial and vocational arts was good but not as good as the number of academic subjects available.

7. Commercial subjects offered in small high schools compared well with

those offered in most schools—almost all small high schools offered typing and bookkeeping and 80 per cent offered shorthand.

8. Generally, the small high schools were relatively well equipped with the basic instructional materials and equipment and with laboratory facilities for science and home economics, but a large proportion of the school principals considered these to be out of date or inadequate.

9. Generally, school accreditational status did not make as great a difference in the characteristics of small high schools as was expected by the writer.

10. School size made more difference in the characteristics of small high schools than school accreditation. When the smallest of the small high schools (1–99 enrollment) were compared with the largest of the small high schools (200–299 enrollment), the latter often were generally better.

NEED FOR FURTHER RESEARCH

From the analysis of the data in this study, certain needs for further research and study seem to justify the following recommendations:

1. Many problems of small high schools have their roots in school finance. Available studies indicate that small high schools cost more to operate than large ones in spite of the fact that teachers and principals in small high schools are paid less. A study of the expenditures and revenues of small and large high schools is needed.

2. A study involving the relationship between size of high school and per-pupil cost and the breadth of educational opportunity is needed.

3. Many studies of graduates of small high schools attending colleges and universities have been made, but practically none have been made of the graduates who entered the labor market. A large percentage of the graduates of small high schools leave the school community during the first few months after graduation to seek work elsewhere. How successful were they in earning a living in large cities and communities?

4. Electronic equipment—video tape, film, audio tape, automated self-teaching devices, TV, and certain classroom methods and procedures, such as multiple classes, team teaching, small-group technique, teacher aids, and flexible schedules, have been recommended for use in small high schools. What are the effects of large-scale use of such teaching machines and techniques? How many small high schools utilize these techniques? And to what extent?

5. County or intermediate school units are being strengthened to offer more services to small high schools. What kinds of services are currently being offered and how extensive are they? What are the results of such programs?

6. The multiple class is one of the oldest techniques in the history of education. This is still the technique used in one-teacher schools. Can two or more subjects be taught by the same teacher in the same room during the same period? If it is true that the student can learn just as effectively in a multiple-class setting, this will be very significant for small high schools.

7. The teaching load of classroom teachers in small high schools is heavy. What are the effects of the present teaching load on the teachers and on instruction? Is there an optimum teaching load?

CHARACTERISTICS, MOTIVATION, AND PROBLEMS OF MATURE MARRIED WOMEN COLLEGE STUDENTS: A STATUS STUDY OF SELECTED STUDENTS AT THE GEORGE WASHINGTON UNIVERSITY

by RUTH HELM OSBORN*

Prior to 1837, women were not admitted to colleges or universities in the United States. Married women of the nineteenth century were forbidden most intellectual life. Husbands did the thinking for their families, and wives were told to give thanks for their safe, sheltered lives. But a sheltered environment did not satisfy all married women during the nineteenth century any more than it satisfies their daughters and granddaughters of the twentieth century. In the 1860's married women who felt a need for intellectual stimulation formed study clubs, meeting secretly at first to avoid ridicule by family members.

Social, economic, educational, and psychological developments of the past century indicate the 1960's will find increased numbers of married women seeking intellectual stimulation at colleges and universities. Since 1960, the University of Minnesota, Radcliffe College, Sarah Lawrence College, and others have initiated continuing education programs at the undergraduate and graduate levels to meet the needs of mature married women.

Providing mature married women with educational opportunities is not a new program at The George Washington University. For some years, evening and day schedules, part-time programs, off-campus and on-campus classes have enabled qualified married women to undertake collegiate studies in the Washington, D. C., area.

PURPOSES OF THE STUDY

The research on married women college students is limited. This study was undertaken to add to knowledge in this area of education based on the experiences of a selected group of married women: thirty years old and older; living with their husbands; seeking Bachelor's, Master's, Doctor's, and professional degrees at The George Washington University. The purposes of the study were to determine (1) characteristics of these students, (2) their motivation for seeking degrees, and (3) problems encountered as students.

* B.S. 1940, University of Minnesota; A.M. in Ed. 1946, The George Washington University; Ed.D. conferred February 21, 1963. Director of research: Virginia Randolph Kirkbride, *Associate Professor of Educational Psychology*. Co-director of research: Robert Edward Baker, *Associate Professor of Education*.

REVIEW OF THE LITERATURE

No comparable studies had been made at other colleges or universities. A survey of the literature revealed information concerning (1) historical background; (2) attendance of married women thirty years old and older at colleges and universities; (3) motivation, academic achievement, and problems significant to the higher education of such students; (4) cultural blocks that thwart their higher education; (5) recent developments.

PROCEDURE

The population for this study included 221 married women students, thirty years old and older, attending The George Washington University during the 1961-62 fall semester. These students represented 59 per cent of the total number. Seventy-four women sought Bachelor's degrees, 116 Master's degrees, and 31 Doctor's or professional degrees and certificates. This latter group consisted of degree and certificate candidates as follows: Doctor of Philosophy (12), Doctor of Education (6), Advanced Professional Certificate in Education (5), Bachelor of Laws (5), Juris Doctor (1), Master of Laws (1), and Doctor of Medicine (1). Thirty-six per cent of the women in this study were enrolled in Columbian College and 49 per cent in the School of Education. The remainder were in the School of Engineering; College of General Studies; School of Government, Business, and International Affairs; Graduate Council; Law School; or the School of Medicine.

A seven-page questionnaire provided (1) personal and educational background; (2) information on parents, husbands, and children; (3) reasons for undertaking degree programs; (4) attitudes of family members, friends, professors, and employers toward educational programs undertaken; (5) advantages and disadvantages experienced; and (6) initial, occasional, and continuing problems encountered while attending the University.

Characteristics of 74 Bachelor's, 116 Master's, and 31 Doctor's or professional degree and certificate candidates were described by (1) their characteristics as students, (2) their experiences as former students, (3) their personal data characteristics, and (4) their multiple roles.

Motivation was discussed in terms of (1) the occupational plans, (2) the reasons given for seeking degrees, (3) the example set by parents and spouse, (4) the attitudes of significant persons, and (5) the satisfaction of psychological needs.

From responses to the 58 problems listed, problems were categorized as (1) initial, (2) occasional, and (3) continuing. Each category of problem was ranked from one through fifty-eight.

To determine whether selected characteristics were related to certain problems encountered, the chi-square technique was used.

THE FINDINGS

Characteristics as Students at The George Washington University

1. The 221 women undertook degree programs in 49 major fields of study at this University. Forty-three per cent were majoring in one of five major fields:

elementary education, psychology, secondary education, guidance, or remedial reading.

2. Eighty-eight per cent were part-time students.

3. Ninety per cent attended campus classes only.

4. Ten per cent were beginning students during the 1961–62 fall semester.

5. The time these women spent in travel to and from their classes varied from 10 minutes to 4 hours and averaged 72 minutes. Ninety-one per cent drive cars and most of them drove regularly to attend classes.

6. Eighty-one per cent did not affiliate with any campus organization; those who did belonged to honorary or professional organizations.

7. Forty-eight per cent attended evening classes, 25 per cent day classes, 25 per cent a combination of day and evening classes. Two per cent did not indicate when they attended classes. Fifty-three per cent preferred day classes.

8. The majority of the women were financing their education by family income or their own earnings. About 5 per cent received some scholarship or fellowship aid.

Experiences as Former Students

1. Seventy per cent stated they were in the upper 10 per cent of their high school graduating classes.

2. Not only were they high scholastic achievers as high school students, they also participated in an average of 3.7 extracurricular activities—principally athletics, dramatics, and chorus.

3. As many of the women studied attended high schools with more than 100 students in the graduating class as attended smaller schools.

4. The educational attainment of these women before marriage ranged from one who had completed ninth grade to seven who had received Master's degrees. Eighty-three per cent attended college before marriage; 48 per cent received Bachelor's degrees before marriage.

5. Only two were ever denied admission to a college or university because they were married. One was denied admission to Sarah Lawrence College in 1934, and another was denied admission to the College of William and Mary during World War II.

Personal Data Characteristics

1. The age range of the women studied was 30–61 years; the mean age was 41.

2. These women were born in 36 states, the District of Columbia, and 17 foreign countries. They come from small towns, medium-sized towns, and large cities.

3. The range in age at marriage was 17 to 46; 24.5 years was the average age at marriage.

4. Eighty-seven per cent had been married only once. Sixty-five per cent rated their marital happiness above average.

5. Forty per cent had from one-half year to eight years more formal education than their husbands.

6. The fathers of the women in this study were in professional, managerial, sales, clerical, agricultural, service, skilled, semi-skilled, and unskilled occupations.

Forty-one per cent of the fathers engaged in professional or managerial occupations. The education of fathers ranged from no formal education to 8 years of college. The average education attained by fathers was 11.6 years.

7. The mothers of the students studied were primarily homemakers—67 per cent were not employed during marriage. (Only 16 per cent had mothers who were employed more than 15 years during marriage.) The range in education of mothers was from 3 years of grade school to 6 years of college. The average education attained by mothers was 11.1 years.

8. The husbands of the women in this study were engaged in many types of occupations—professional; managerial; sales; clerical; agricultural; service; skilled, semi-skilled, and unskilled labor. They included army colonels, congressmen, educators, engineers, foreign service officers, lawyers, naval officers, physicians, scientists, a White House assistant, a dairy farmer, a baker, and a truck driver. Eighty-eight per cent engaged in professional or managerial occupations. The education of husbands ranged from 4 years of grade school to 8 years of college. Their average educational attainment was 4.2 years of college. Seventy-nine per cent had one degree or more—Bachelor's, Master's, Doctor's or professional degrees. Fifty-three per cent of the husbands were employed by the Federal Government, including 12 per cent in military service. Fifty-seven per cent of the husbands had attended college since marriage, but only 12 per cent were students during the fall semester, 1961–62. Sixty per cent of the husbands were veterans of World War II or the Korean War.

Multiple Roles

1. The women in this study were not only college students, wives, and homemakers, but also mothers, employees, and participants in club and community organizations.

2. The number of children ranged from none to seven. Twenty-one per cent had no children; sixty per cent had two or more children.

3. Forty-eight per cent were employed full time during the fall semester, 1961–62, 9 per cent part time. Sixty-seven per cent of the 105 women employed full time were teachers, administrators, and supervisors in the public schools. The remainder were employed by the federal, district, or county government; industry; private organizations; or were self-employed. Ninety-seven per cent had worked in paid employment before marriage, after marriage, or before and after marriage.

4. Seventy-six per cent belonged to one or more community or professional organization or club. Fifty-eight per cent stated that reading was their hobby or leisure-time activity, followed in order of preference by sports, sewing, and music. (Less than 2 per cent of the women mentioned watching television as a leisure-time activity.)

Motivation of Women in This Study to Seek Degrees

1. The women in this study planned to enter professional occupations after completing their degree programs, or they were already professionally employed. Approximately two-thirds were in, or had plans to enter, some field of education. About 7 per cent were preparing to enter law, medicine, science, or engineering.

About two-thirds of the 105 women employed full-time planned to remain in the same occupations; one-third planned to enter related or entirely different occupations. Seventy-three per cent of the nonemployed women had "after graduation" job plans. Some planned to start professional work when their children were older. Thirty per cent of the women in this study preferred part-time employment; 63 per cent preferred full-time employment; and 7 per cent did not indicate a preference. Numerous reasons for preferring full-time jobs were cited. "Enjoy working" was volunteered by one-fourth of this group. Those women who indicated a preference for part-time employment felt that they could best meet the responsibilities of home and children if they were employed part-time only.

2. Top-ranking reasons for seeking degrees were: personal growth and self-improvement, enjoyment of learning, and professional growth. Although related to the top-ranking reasons, the following were also cited as reasons for seeking degrees: preparation for teaching, financial security for self, financial assistance for children, advancement in work, preparation for better jobs, enrichment of everyday living, preparation for employment other than teaching, and salary increase.

3. The women in this study appeared to follow a pattern set by their parents or husbands, for 96 per cent had mothers, fathers, or husbands who had some college education; 84 per cent had mothers, fathers, or husbands who had completed four or more years of college; and 25 per cent had one or both parents who had completed four or more years of college.

4. The women studied were encouraged to seek further education by their families, friends, professors, and employers. Three-fourths were encouraged by their husbands. Mothers, fathers, daughters, friends, and professors encouraged about two-thirds. Sons urged 60 per cent to seek further education. Only one-third felt that mothers-in-law and fathers-in-law gave approval. Employers were encouraging to over 80 per cent. However, two women claimed no one was encouraging to them.

5. Using Erikson's frame of reference in an analysis of questionnaires, some of these women indicated that by working toward university degrees they were satisfying psychological needs for trust, independence, initiative, achievement, status, interpersonal relations, creativity, and integration.[4]

Problems of 221 Mature Married Women Students

1. The women studied found that their initial difficulties arose from inadequate study techniques, deficient University orientation, and lack of self-confidence. However, most problems initially encountered did not persist.

2. Most of the problems encountered were occasional problems. Of 58 problems listed on the questionnaire, these women encountered on an average 15 occasional, 5 continuing, and 2 initial problems. Fifty per cent or more checked the following as occasional problems: "cannot schedule my time to cover my multiple duties and responsibilities;" "mental strain due to multiple duties and responsibilities;" "physical exhaustion due to multiple duties and responsibilities;" "curtailed social activities;" "tensions of exams increase tensions at home."

[4] Erik H. Erikson, *Childhood and Society* (New York: W. W. Norton and Company, Inc., 1950).

3. The top-ranking continuing problems encountered were: "lack of time for hobbies and leisure;" "not enough time to study subject thoroughly;" "must sacrifice time with family to achieve standard required by classes;" "curtailed social activities."

4. Most of the problems encountered by 50 per cent or more women as initial, occasional, or continuing problems stemmed from lack of time, inability to schedule time, mental strain, or physical exhaustion resulting from assumption of multiple roles.

5. Problems encountered by comparatively few students were: "resentment from younger students;" "discrimination because of age or marital status;" and "inability to compete with younger students."

6. Based on chi-square tests, there appeared to be a significant relationship between the following characteristics and problems: the degree sought and difficulty in learning to study; the highest grade (number of school years) completed before marriage and doubt concerning ability to succeed in college courses; the age of student and whether able to obtain adequate counseling; the time of day student attended classes and interference of class schedule with family's dinner hour; student employment status and conflict over sense of values—woman's place is in the home vs. preparing for a vocation; the husband's education and conflict over sense of values—woman's place is in the home vs. preparing for a vocation; and help received with homemaking and little or no social life.

CONCLUSIONS

From this investigation the following conclusions seem justified:

1. Mature married women students, like other groups of students, show individual differences in their characteristics, motivation, and problems as students.

2. The desire for personal growth and self-improvement, the top-ranking reason for seeking degrees given by women in this study, indicates that the need for intellectual development does not terminate with marriage.

3. A large number of the mature married women students seeking degrees at The George Washington University are learning-oriented. They were high achievers in high school; they indicated reading as their top-ranking leisure activity; and they claimed "enjoy learning" as the second most frequent reason for seeking a degree in higher education. Their comments revealed that they found pleasure in collegiate studies.

4. Mature married women students are also goal-oriented in their pursuit of higher education. Such reasons as professional growth, better job, advancement, and salary increase suggest that educational experiences were selected in terms of achieving these goals. The plans of nonemployed married women students indicated that most of them were preparing to enter professional occupations.

5. Attaining university degrees contributes to the actualization of the potentialities of mature married women, thus increasing their self-worth and happiness and improving their chances for making a contribution to society.

6. It appears from this study that married women must accept the fact that there will be problems involved with undertaking degree programs. Lack of time

seemed to be the problem most often encountered. As a result sacrifices had to be made in time for hobbies or leisure; time for club, church, or community activities; time for social life; time spent with husband and children; or time devoted to studies. Also physical exhaustion, mental strain, and increased tensions at home during examination time can occur as occasional problems.

7. With a few exceptions, the problems encountered by students in this study were unrelated to the degree sought, the college in which enrolled, the time spent in travel, the number of semester hours undertaken, the employment status, the time of day classes were attended, the help received with homemaking, or the number of children.

8. Over 70 per cent of the nonemployed students prefer day classes, but 42 per cent attended day classes only. More married women might seek degrees if classes were scheduled to coincide with hours their children attend school.

9. Of assurance to married women contemplating study at The George Washington University may be the fact that few women in this study encountered resentment from younger students, discrimination because of age or marital status, and inability to compete with younger students.

10. Conflict in sense of values—woman's place is in the home vs. preparing for a vocation or developing potential abilities was a problem for 30 per cent of the women in this study. Further indication that this conflict exists appeared when some husbands failed to encourage wives to seek degrees, and some parents, in-laws, and friends failed to understand why degree programs were undertaken. There is need for young men and girls, mature married women and their husbands to understand the span of woman's life, the discontinuities and changes in her life, the motivation for learning, and the reasons why women should develop their abilities or prepare for a vocation.

RECOMMENDATIONS

1. Mature married women students would benefit from specialized student personnel services: orientation to the University, instruction in study techniques, counseling, analysis of abilities, occupational information, scholarship information, and placement. Perhaps present facilities at the University can meet these needs by some special focus on mature married women.

2. Additional classes scheduled to coincide with hours when children are in school would be helpful. Also, consideration should be given to setting up additional off-campus classes in suburban areas to meet the needs of homemakers and encourage more women to continue their education.

3. Information on the span of woman's life, the discontinuities, the multiple roles, the change in their roles, and the patterns of work outside the home, should enable high school girls to gain perspective in their educational, occupational, and marriage goals. Teachers, counselors, and parents should point out to high school girls that choices girls make in high school affect their educational development as married women and the eventual realization of their potentialities.

4. When increased numbers of mature married women seek degrees in colleges and universities throughout the United States, a nation-wide study of their charac-

teristics, motivation, and problems is recommended. Comparisons could be made based on geographic location, types of degrees sought, and types of colleges attended.

5. It is recommended that follow-up studies be initiated on such students to determine what they accomplish as a result of their educational endeavors. The findings would provide useful career information for counselors. Follow-up studies would also be desirable to determine reasons for drop-outs and a basis to compare mature married women who leave college with those who complete their degree requirements. This information would aid in selection of married women for degree candidacy.

6. A follow-up study of the 221 women studied at The George Washington University is also recommended.*

7. It is recommended that comparative studies be made of married women students, 30 years and older, who completed some college before marriage with those who did not attend college before marriage. From these studies, conclusions could be drawn as to the desirability of college for women before marriage compared to beginning college as mature married women.

PROFESSIONAL PREPARATION FOR EDUCATORS OF ADULTS: A SURVEY OF THE STATUS AND CONTENT OF GRADUATE TRAINING PROGRAMS IN ADULT EDUCATION

by ALICE YEOMANS SCATES†

This study was designed to examine the growth of professional training programs for adult educators offered by colleges and universities and to gather the judgments of selected groups about the kinds of professional preparation needed. These groups consisted of persons in educational institutions directly concerned with the education of adults.

* Since this study was undertaken, 35 per cent of the women have received their degrees or certificates. This percentage was based on graduates from 4 commencements: February 1962, June 1962, February 1963, and June 1963. Twenty-three per cent failed to continue as degree candidates during 1962–63.

† B.S. in Ed. 1936, New Jersey State College, Glassboro; Ed.M. 1950, Duke University; Ed.D conferred February 21, 1963. Director of research: John Bernard Holden, *Professorial Lecturer in Education.*

A review of the literature revealed that the topic of professional preparation for educators of adults is of fairly recent origin. The first article clearly identifiable as dealing with this subject appeared in the *Adult Education Bulletin* in June 1940. A listing of "Opportunities for the Professional Study of Adult Education" began in April 1941 and has appeared annually thereafter. The amount of literature dealing with this subject has increased slowly, and the bulk of it is still in periodicals and in "fugitive materials". During the period from 1940 through 1960 only twenty-one references were identified as pertinent to this study. These included the first doctoral dissertation dealing with professional training programs which appeared in 1954 and a second which was completed in 1960.

The first part of the study was concerned with locating graduate programs being offered by colleges and universities, for the purpose of determining the number and kind of such programs. This was done through a postcard questionnaire sent to eighty-six institutions which granted Doctor's degrees in education. Catalogues were obtained from all of the institutions offering doctoral programs in adult education as indicated by the responses to the postcard questionnaires. These catalogues were examined for information about the course offerings.

Next, a full questionnaire was developed on the basis of information gathered from the catalogues and the review of the literature. The major purpose of this questionnaire was to obtain the judgment of selected groups of respondents concerning the relative values of various content components of a professional training program. Value judgments were obtained through the use of a rating scale which made it possible to rank the items in terms of importance. The questionnaire also included questions about other relevant items such as places of employment, undergraduate training, level of education, and desirable characteristics of the adult educator.

The full questionnaire was sent to five groups of persons who had some professional responsibility in an educational institution, who had some concern with the actual process of educating adults, and who were likely to have some measure of responsibility for providing teachers and leaders for adult education activities. These groups were (1) professors of education interested in adult education, (2) persons associated with the National University Extension Association, (3) educators active in the Association of University Evening Colleges, (4) directors of adult programs listed by the American Association of Junior Colleges, and (5) members of the National Association of Public School Adult Educators.

SCOPE AND CONTENT OF PROFESSIONAL PROGRAMS

Responses to the postcard questionnaire showed that there were 19 institutions offering doctoral programs with a major in adult education and 24 institutions in which this field might be chosen as a minor. On the Master's level there were again the 19 institutions offering adult education as a major and 22 providing it as a minor field. In addition, there were 46 institutions regularly offering courses in adult education for graduate students who might or might not be majoring in this area. Of these, there were 20 which did not offer the area as either a major or a minor at the Doctor's or Master's level.

Through a comparison with other surveys an effort was made to identify trends in the development of these graduate programs. Over the eight-year period from 1952–53 to 1959–60 there seemed to be very little change. It was concluded that during this period the institutions offering degree programs in adult education remained substantially the same, thus supporting the first hypothesis to the effect that there had been no increase since 1952–53. The second hypothesis, which stated that the institutions offering degree programs in 1959–60 were the same ones offering them in 1952–53, was also confirmed.

The catalogues and brochures describing graduate degree programs were analyzed for content. The results were slightly more extensive than those reported in the two other doctoral dissertations dealing with this subject, but nothing substantially different was revealed. A comparison of the number of courses offered by various institutions in 1956–57 and in 1959–60 was also made. In both cases, the median number of courses offered was seven. This apparently represented the typical degree program in adult education.

PREPARATION NEEDED BY PROFESSIONAL ADULT EDUCATORS

The returns on the full questionnaire were first examined in terms of the responses of the total group rather than the five subgroups. In their replies to the first question dealing with appropriate undergraduate training for an adult educator almost two-thirds of the total group (63 per cent) felt that he should have an undergraduate major in liberal arts, and over half of the respondents (58 per cent) suggested a minor in education. This led to the rejection of the hypothesis which, in its null form, stated that there would be no clear consensus on the part of the total group of educators as to a preference for either liberal arts or education as the more desirable undergraduate training program. (For the purposes of this study, a "clear consensus" was defined as 60 per cent of the group.)

The respondents were asked to select the most important in terms of preparation from among nine suggested places of employment for professional adult educators. An analysis of the results showed that there were six they considered to be of substantial importance, and there was a strong tendency among the subgroups to include their own places of employment as one of these. The six job settings to be considered in training the adult educator were in junior and community colleges, public schools, colleges and universities, community institutions, community organizations, and private industry. However, these data did not provide a basis for rejecting the hypothesis which stated that there would be no clear consensus on the part of the total group as to the most important place of employment for the career development of an adult educator.

The responses to the item concerning the relative importance of various fields of knowledge for an adult educator were particularly striking. Each respondent rated each of ten subject-matter fields in terms of a five-point scale. The ratings were then averaged and the fields arranged in rank order of importance. In the thinking of the total group of respondents, the field of psychology was most important, and it was followed closely by the field of sociology. The field of education ranked third. These results led to the rejection of the hypothesis which stated that

there would be no clear consensus on the part of the total group as to the importance of any given field of knowledge in the social sciences for the educator of adults.

The respondents also used the five-point rating scale to indicate the importance of various topics of content within the area of adult education itself. These responses were clearly consistent with the responses to the previous question, since here the unanimous selection of all subgroups was the "psychology of adults" as the most important topic. It was followed by knowledge about group processes, counseling and guidance of adults, program planning and curriculum, and the selection and training of teachers and leaders. Here the respondents had rated seventeen different content topics. These data may be regarded as suggesting required courses at the upper end of the rank order and electives at the lower end. Once again it was possible to reject the null hypothesis to the effect that there would be no consensus that any one topic was more important than the others.

The third use of the five-point rating scale was in the item dealing with knowledge, skills, and experiences characteristic of graduate programs. The respondents felt that an internship or work experience was most important for the preparation of a professional adult educator. This was followed by seminars or tutorial study focused on the student's special interest in adult education and by observation of various kinds of adult education activities. In this instance the respondents rated seven different items characteristic of graduate training programs.

A question was raised about the level of training justified by the current stage of development of adult education—whether or not it justified a graduate program and, if so, whether this should be at the Master's or Doctor's level. Over 80 per cent of the total group felt that a graduate program was justified, but less than half (43 per cent) felt that a doctoral program was indicated. Over a third (38 per cent) felt that training at the Master's level would be sufficient. Hence the hypothesis to the effect that there would be no clear consensus about the appropriate level was accepted.

The questionnaire also included an item designed to obtain a rough generalization of the concept of adult education held by respondents. Two concepts were suggested by the phrases "a social movement" and "a separate area in the field of education". Slightly less than two-thirds (63 per cent) of the total group identified adult education as a part of the field of education, but there were still nearly a third (29 per cent) who conceived of it as a social movement. Thus it was possible to reject the hypothesis that there would be no clear consensus on this question.

SIMILARITIES AND DIFFERENCES AMONG SUBGROUPS OF RESPONDENTS

After consideration of the responses of the total group of educators to the questionnaire, an examination was made of the responses of the various subgroups in order to determine whether or not there were substantial differences among them. The information which they had provided about their own educational backgrounds was analyzed first. This revealed that 62 per cent of the total group majored in fields other than education at the undergraduate level. Their specialties included

business and economics, English, history, mathematics, and science. In addition there were many who simply reported their undergraduate work as "in the liberal arts" or "in the social sciences". However, this was less true of the public school adult educators of whom half had majored in education. These data suggest that the majority of persons in the other subgroups had intended to pursue careers in other fields and that they did, in truth, enter adult education "by the back door". The situation is reversed with regard to graduate study. Sixty-three per cent of this group reported graduate work in education, and only 21 per cent reported work in other fields.

Statistical examination through rank-order correlations showed that the subgroups were generally in extremely high agreement in their responses to the questions about the relative importance for adult educators of various fields of knowledge; of the content areas in adult education; and of the knowledge, skills, and experiences characteristic of graduate training programs. It was generally concluded that these five subgroups were substantially more often in agreement than they were divided in their responses to the questions posed. This led to the acceptance of the hypothesis which stated that there would be no clearly identifiable differences among the subgroups. Since this hypothesis was found tenable, it was then concluded that the framework of the questionnaire encompassed a basic program of professional preparation which was acceptable to all of the respondents and which was further defined by the opinions and judgments they expressed.

The foregoing conclusions provided a basis for several recommendations which are particularly appropriate for an urban institution such as The George Washington University. These recommendations encompass a total program for the education and training of professional adult educators. However, it is recognized that many persons already employed in some aspect of educating adults would not find the complete program of interest.

RECOMMENDATIONS

1. *The professional preparation of an adult educator should be focused on the "behavioral sciences".*—This relatively new term implies a considerably broader field of knowledge than that usually suggested by the term "education," since it also includes psychology, sociology, anthropology, linguistics, economics, and political science. All of these focus on the behavior of man and so represent knowledge which is needed by anyone trying to help man understand and control his behavior through education.

2. *Primary attention should be given at present to developing stronger programs in adult education at the Master's level.*—Such programs would help bridge the gap between those already working in adult education whose professional preparation is likely to have been in some other area and those who are beginning to prepare for this work on a professional basis. Persons with Master's degrees would be available to enter practice immediately, thus helping answer the growing demand for those trained in adult education.

3. *The school of education should explore and help initiate the development of a curriculum leading to the Doctor's degree in the behavioral sciences with a ma-*

for in adult education.—Such a curriculum would involve many other schools within the university in providing courses in the fundamentals of their own disciplines, and the school of education would retain responsibility for the applied aspects of adult education. Leadership toward achieving such a curriculum on the part of educators would offer a means of attracting and holding capable students.

4. *The requirement for acceptance into a graduate program in adult education should eventually be a Bachelor's degree in liberal arts, and, as soon as practicable, there should be no requirement for undergraduate work in education.*—Students majoring at the undergraduate level in fields such as psychology, sociology, political science, and education should also be considered for acceptance in graduate programs of adult education.

5. *A curriculum at the graduate level for adult educators should include both fundamental and applied work.*—The former deals with basic disciplines related to man and the latter with knowledge and technics needed in practice. In summary the subjects to be dealt with are as follows:

Fundamental Knowledge

Anthropology
Education
Communications
Psychology
Research Methodology
Sociology
Statistics

Applied Knowledge

History and Philosophy of Adult Education
Methods in Educating Adults
Agencies and Programs in Adult Education
Program Planning and Evaluation
Guidance and Counseling of Adults
Special Groups of Adults
Participant-observation of Adult Education Activities
Internship
Thesis or Dissertation

As has been suggested, the foregoing subjects represent only an outline of what might be provided for those wishing to engage in the education of adults as their full-time "profession". Many who have been working in this field for some time will have no interest in some of the topics suggested. However, the whole represents an "ideal" suggested by the responses of many practitioners already engaged in important tasks relating to the education and training of adults.

AN ANALYTICAL STUDY OF SELECTED ASPECTS OF PRE-SERVICE PREPARATION OF PROSPECTIVE LIBYAN SECONDARY SCHOOL TEACHERS AS PROVIDED BY THE COLLEGE OF LIBERAL ARTS AND EDUCATION OF THE LIBYAN UNIVERSITY

by OMAR MOHAMMED TUMI SHEBANI*

THE PROBLEM

The intent of this study was to accomplish the following purposes:

1. To describe the historical development of Libyan education and teacher training in five periods of Libya's history and to ascertain the basic factors affecting this development.

2. To describe the current policies and programs provided by the College of Liberal Arts and Education of the Libyan University for the preparation of prospective secondary school teachers.

3. To formulate criteria for desirable programs of secondary teacher education based on an intensive review of teacher education literature.

4. To apply these criteria in analyzing and evaluating selected aspects of the undergraduate programs and practices of the selected college.

5. To make such suggestions for modification and improvement as may appear to be appropriate and necessary to prepare adequately prospective teachers for Libyan secondary schools.

PROCEDURES

The procedures followed in making this study were as follows:

1. Selecting the teacher-training level and the appropriate teacher-education institution to be the subject of the study.

2. Examining the available literature on Libya and its educational system.

3. Securing specific information pertaining to current practices of the selected institution through: (a) examination of its written regulations and prescribed curricula, (b) reviewing available literature, (c) correspondence with its administrative officers, and (d) personal interview with a group of former students recently graduated from it.

4. Making an intensive review of current American literature dealing with nine broad areas in teacher education—namely, objectives, recruitment, selection, coun-

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seling, over-all curriculum, general education, subject-matter education, professional education, and laboratory experiences.

5. Developing nine criteria for a desirable program of secondary teacher education in the light of the reviewed literature, each including a number of specifications or standards.

6. Analyzing and evaluating current practices of the selected institution in terms of the developed criteria.

7. Making recommendations and suggestions for future improvement of preservice preparation of Libyan secondary school teachers.

FINDINGS

The main findings of the study were as follows:

1. Libyan education continued to be mostly religious in nature throughout the Arab rule (642–1517) and the Turkish rule (1520–1911). The only exception was the slight movement toward modern public education which started in the last decades of the Turkish rule.

2. Teacher preparation continued to be completely incidental throughout the Arab rule and in most of the Turkish rule. However, when modern public education was introduced in the last decades of the Turkish rule, the need for teacher training in the modern sense arose. To meet this need, the Turkish authority inaugurated the first normal school at Tripoli in 1890.

3. A dual system of traditional religious education and of modern secular education was followed throughout the Italian rule of Libya (1912–1942). Some efforts were made by the Italian administration for improving the training standards of Arab teachers for the Italo-Arab modern public schools. These efforts included the establishment of the Islamic Higher School which among its main purposes was to prepare elementary school teachers.

4. Modern educational facilities witnessed a great expansion during the Allied rule of Libya (1943–1951). To meet the problem of teacher shortage resulting from this expansion, the Allied administration relied mostly on temporary and short-range measures. Their effort, in this respect, took the form of establishing teacher-training centers only in the last years of their rule.

5. Since Libya obtained its independence in December 1951, Libyan education has been expanding at a rapid rate. To meet the problem of teacher shortage resulting from this expansion, three levels of teacher-training institutions have been established. Only secondary school teachers are trained at the college level. The College of Liberal Arts and Education, which has been selected for this study, is one of the main colleges designed to train secondary school teachers.

6. The main objective of the College of Liberal Arts and Education is to produce specialists in some subject-matter areas who can be used as secondary school teachers.

7. In spite of the fact that the main objective of the College is to produce secondary school teachers, it has no purposefully planned program for recruiting and encouraging the ablest secondary school graduates to enroll as teacher-education students.

8. The general and initial admission to the College is based mainly on three conditions: (a) possession of a General Secondary School Certificate, (b) freedom from infectious and contagious diseases, and (c) good conduct.

9. Although the College has no general education program planned as such, it has some common programs which include the introductory courses which occupy the whole freshman year, the physical education activities, the English language which is a required subject for all students throughout the four years, and history, and/or Arabic. The total clock hours allocated to these common elements makes up about 40 per cent of the total clock hours.

10. Starting from the sophomore year, the student is entitled to choose his major field from the available six specializations. Specialized education programs take about 49 per cent of the total program.

11. Beginning with the junior year, students are provided with uniform professional education programs. The only practical professional experience provided for in the professional sequence is student teaching which is provided for in the senior year.

CONCLUSIONS

The findings of this study relative to the College's practices seem to justify the following conclusions:

1. The lack of a unified written statement defining the objectives and functions of the College seems to result in conflicting points of view.

2. As a result of the complete lack of any organized teacher-recruitment program at all levels, young Libyan students are not informed, in a systematic manner, about the nature, the rewards, and the challenges of teaching.

3. The College has only a routine initial admission program, applying such limited screening criteria and procedures that it cannot secure the most suitable persons for teaching.

4. The College has no organized guidance program, and the importance of this kind of service does not seem to be recognized, by either the College's officers or its teaching staff.

5. The College's curriculum lacks defined objectives, flexibility, practical reference, and functional relationship to Libyan culture and Libyan situations.

6. The College has no planned and coordinated general education program and, thus, general education objectives are served, if at all, on incidental bases.

7. Despite the bulk of the College's curriculum being devoted to subject-field preparation, the current specialization system lacks essential breadth.

8. Only 11 per cent of the total College program is allocated to the professional sequence which provides for some theoretical studies and student-teaching experiences. Education courses seem to be lacking practical reference to Libyan school situations.

9. The student-teaching program is scheduled only once a week, except for the last fifteen days of the program in which it is scheduled as a full-time experience.

RECOMMENDATIONS

In terms of the conclusions listed above, the following recommendations may prove to be desirable:

1. The secondary-teacher-preparing institution should have a unified statement defining its objectives and functions.
2. The secondary-teacher-education institution should have its own pre-service teacher-recruitment program that is planned on long-range bases and highly coordinated.
3. The secondary-teacher-education institution should provide for adequate selective admission and retention programs aimed at the admission and retention of the most promising students through the use of adequate screening criteria and techniques.
4. The secondary-teacher-education institution should provide for an organized guidance program designed to help each student make wise choices and decisions.
5. The over-all curriculum of prospective secondary school teachers should be cooperatively planned and characterized by being purposeful, functional, flexible, and well-balanced.
6. Prospective Libyan secondary school teachers should receive the best possible general education aimed at the development of common understandings, skills, and attitudes needed by effective persons and Libyan citizens.
7. The prospective Libyan secondary school teachers should have sound subject-matter specialization characterized by depth and breadth, and aimed at the development of knowledge, skills, and attitudes.
8. The pre-service professional education program for prospective Libyan secondary school teachers should be adequate so as to develop among them professional understandings, skills, and attitudes necessary for successful beginning of secondary school teaching.
9. Prospective Libyan secondary school teachers should engage in professional laboratory experiences of high quality. Provision should be made for a longer period of full-time student-teaching experiences.
10. In order to provide for secondary-teacher-education programs applying the recommendations listed above, a Teacher's College should be established.

AN ANALYSIS OF THE DOCTOR OF EDUCATION DEGREE PROGRAM AT THE GEORGE WASHINGTON UNIVERSITY

by JOHN GORDON BOSWELL*

This study was an analysis of the program leading to the degree of Doctor of Education at The George Washington University. The purpose of the study was to determine whether this program, established in the early 1930's and basically unchanged since the early 1940's, had sufficient merit and flexibility to meet the changing needs of professional educators.

The first part of the study consisted of the opinions of the graduate about the program as reflected in the results of a questionnaire sent to the 37 people who had graduated from the program during the years from 1951 to 1961.

The second part involved the study entitled, *The Doctorate in Education*, completed in 1960, and published by the American Association of Colleges for Teacher Education. This study presented both information on the institutions and their courses of study, and information about the graduates of these institutions during the academic years 1956–57 and 1957–58, together with their opinions about selected portions of the programs from which they graduated. The program at The George Washington University was compared with programs in other universities described in *The Doctorate in Education*.

METHODS OF PROCEDURE

This study involved both bibliographic and normative research. Information was assembled in these two separate ways, but the analysis of the information compared both sets of data as far as possible. The specific procedures may be summarized as follows:

1. The portions of the doctoral program to be analyzed were identified as the admission procedure, course work, guidance procedure, and the evaluation procedure.

2. The George Washington University program was compared with selected findings of *The Doctorate in Education*.

3. A questionnaire was mailed to the 37 graduates, and the results were tabulated and analyzed.

4. The implications of this study were noted, and recommendations for the Doctor of Education degree program at The George Washington University were made.

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* A.B. in Ed. 1953, A.M. in Ed. 1956, The George Washington University, Ed.D. conferred June 5, 1963. Director of Research. Robert Edward Baker, *Associate Professor of Education*.

REVIEW OF THE LITERATURE

The literature which pertains to doctoral programs in education through the year 1959 has been exhaustively reviewed in two other studies. After 1959 there is very little general literature which is pertinent to this study. There were four doctoral studies which dealt with doctoral programs in education, and two of these were specifically related to this study. One, by Cook, was an extensive study of the Doctor of Education degree program at Wayne State University. The other, by Ferguson, was a study of doctoral programs in education offered by 81 universities in the United States.

The Ferguson study was published by the American Association of Colleges of Teacher Education as *The Doctorate in Education.*

THE FINDINGS

The comparison of selected results of the AACTE Study concerning admissions policies and course requirements with the same parts of the program of studies at The George Washington University showed that The George Washington University admissions requirements were generally similar to those found nationally, but that course requirements cannot be compared, since The George Washington University has no specific course requirements.

Comparisons involving the two sets of students showed that most of The George Washington University graduates majored in administration and guidance, two of the five fields which produced a majority of the graduates on a nationwide basis, and a majority of these George Washington University graduates were also employed in these two fields. The George Washington University graduates were slightly older and took somewhat longer to attain the degree than did the national average of doctoral graduates in education.

The AACTE Study concluded that neither extreme flexibility nor extreme prescription with regard to a student's course of study meets the needs of a doctoral candidate. It was also felt that work in fields other than education would help provide the necessary breadth of study. The curricular pattern which has been dominant in doctoral education for half a century is undergoing change and will probably undergo considerably more.

It was also concluded that it does not matter whether the control of doctoral programs in education is in the college of education or the graduate school, so long as the program is flexible, has breadth of study, and provides a reasonable number of graduates. These graduates should be evenly placed throughout the fields of doctoral study, and an age limit should be considered to assure graduates adequate opportunity to use their education.

As expected, graduates' opinions of the doctoral program in education at The George Washington University, were generally favorable. However, their approval was not unqualified, and the answers to a majority of the questionnaires showed careful consideration.

Most of the graduates entered the doctoral program on their own initiative. Their opinions of the mechanics by which they were admitted to the program were

contradictory. The initial interview was held to be generally effective, yet the comments indicated reservations about the interview. The two admission tests were remembered as generally accurate in predicting later success in the program, yet most of the comments were negative. The interview with the Committee on Graduate Studies received approval since the admission machinery had operated to admit them to candidacy. Second thoughts seemed to bring about some specific objections which were voiced in their comments.

The graduates were highly pleased with the guidance phase of the program of studies although they were quite vague about its nature and the basis of their approval. The guidance they had received was identified by the graduates as having been informal in character, and it had been sought by the graduates in almost every instance.

There were more reservations about the course work than about any other part of the doctoral program. One objection concerned the teachers and their methods of presentation. While a majority of the students felt that most of the teaching was reasonably good, their endorsement was mild. The other major objection came from some graduates' desires to have additional course work available in some fields, usually the major field. The George Washington University Library was rated inadequate for doctoral study in education.

The evaluation of candidates' progress toward the Ed.D. degree during the period of this study, was done by means of comprehensive examinations in each of five fields of education. The dissertation was evaluated by an oral examination administered by a committee appointed specifically for that purpose. The graduates felt that these methods of evaluating their progress had been satisfactory.

In general, the respondents were satisfied with the program from which they graduated, a reaction which was to be expected.

CONCLUSIONS AND RECOMMENDATIONS

The comparison made between the Ed.D. program at The George Washington University and its graduates and similar elements reported in the AACTE Study, and the results of the questionnaire sent to the selected graduates of The George Washington University make it possible to draw some conclusions about the Ed.D. program at this University.

The doctorate in education was designed as a professional degree, and both the results of the AACTE Study and the results of the questionnaire sent to The George Washington University graduates show that the recipients of the degree are largely practicing in the field of Education. Considering both the need for educational leadership offered by doctors of education and the capacity of the School of Education to produce graduates with this degree, the program of studies at The George Washington University is too small and two concentrated. Two faculty members directed the studies of 75 per cent of 11 years' production of graduates, or 28 people, leaving the rest of the faculty with 25 per cent, or 9 people. If 2 faculty members could direct the work of 28 people, it would seem that the program could be increased without overburdening the faculty. At the same time potential leadership in other fields of education would be produced.

In the comparison of institutional programs, the Ed.D. program at The George Washington University is seen to be more flexible and informal than most. This flexibility and informality stems in part from the relatively small number of candidates. This has been an apparent asset to the graduates, as almost all have stayed in work involving education and have achieved success in their work. If a small flexible program has produced successful graduates, it would appear to follow that a larger program with the same relative degree of flexibility would produce even more graduates with the professional education necessary to achieve success and provide educational leadership.

It was also found that those graduates who had spent some time in full-time study finished more quickly than the average of the total group. While the ratio of men to women in the program during the 11 years was 3½ to 1, the ratio of men to women in the group which had had some full-time study was 1 to 1. Although finances were not considered in the questionnaire, the preceding statements make it obvious that money is a prominent consideration in pursuing a doctoral program.

With the foregoing conclusions in mind, it is recommended that the Ed.D. program at The George Washington University be expanded to include more candidates in different fields. This leads to the following supporting recommendations:

In order to expand the program of studies along the lines desired, it will be necessary to begin a program of selective recruitment.

A brochure describing the University's doctoral program would be essential for a recruitment program.

To attract candidates from outside the Washington area additional provision must be made for fellowships, scholarships, and loan funds.

The present policy of direct admission to candidacy should be continued in the expanded program.

With a larger number of doctoral candidates, advantage should be taken of small doctoral seminars. This was not recommended by The George Washington University graduates because, as most of their comments indicated, they felt working with Master's candidates was a valuable experience. In another section of the question, however, many of the graduates indicated they felt the need of additional depth in some of their work. With additional candidates to make this financially feasible, seminars would be one way of providing depth of study.

It is also recommended that as an additional means of providing depth of study, internships be arranged with the local school systems, agencies of the Federal Government, and professional organizations.

In order to provide breadth of study, where the candidate's major field warrants it, it is recommended that work in a field other than education be provided to replace one of the professional fields. This work should be not more than 15 semester hours and should be based on the candidate's previous field of academic emphasis.

The increased size of the program will make the establishment of a time limit mandatory if the energies of both faculty and candidates are to be utilized more efficiently. A 6-year time limit is recommended. While more full-time candidates are a necessity to an enlarged doctoral program, there will still be part-time candi-

dates to be served and this time limit will allow these candidates to complete the program.

The present policy of not requiring a definite number of credit hours should be continued. Students with different backgrounds will require different amounts of work and the value of an educational experience is in its quality, not its quantity.

It is recommended that the supply of professional books in the University Library be increased and brought up to date in all fields, and that all of the prominent professional journals be made available.

Finally, in order to accomplish these recommendations and still maintain a reasonable degree of flexibility, control of the Ed.D. program should remain in the School of Education.

THE ADMINISTRATION OF PROFESSIONAL FIELD EXPERIENCES IN METROPOLITAN SCHOOL SYSTEMS

by WILLIAM FRANCIS BRENNAN*

THE PROBLEM

The purpose of this study was to identify and evaluate the current practices and recurring problems incidental to the administration of professional field experiences. The practices considered were those utilized by metropolitan school systems when they cooperated with teacher education institutions to provide opportunities for students to gain direct experience in public school systems. The problems considered were those that confronted the school systems in the execution of this cooperative endeavor. More specifically, the study had the following major purposes: (1) to identify the characteristics of the school systems that were currently providing these experiences; (2) to determine which regulations affected the participation of these school systems in providing these experiences; (3) to identify the administrative procedures that these school systems employed to administer their programs involving: (a) observations, (b) student teaching, (c) teaching internships, (d) administrative internships, and (e) programs for other educational

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specialists; (4) to determine the type of administrative organization that these systems utilized on the system level to regulate and control their participation; (5) to identify the more effective procedures; and (6) to determine the extent to which efforts were being made to coordinate the professional field experience programs within metropolitan areas.

PROCEDURE

The 264 school systems included in this study were identified through data from the 1960 Census. The largest metropolitan areas were selected by including the 50 areas with populations in excess of 500,000 inhabitants which contained one or more teacher education institutions. These areas represented 29 states and the District of Columbia. Within each area, the school systems with enrollments in excess of 5,000 pupils or school district populations in excess of 25,000 inhabitants were selected for inclusion in the study.

Two procedures were utilized to secure the data necessary for the completion of this study. Originally, a series of interviews was held with the personnel who administered the professional field experience programs in the school systems in the Washington, D. C., Metropolitan Area. Next, a questionnaire was sent to the school systems in the other metropolitan areas after they had responded affirmatively to a preliminary inquiry concerning their participation in professional field experience programs.

The information secured through the use of the questionnaire was tabulated to identify the following characteristics of the cooperating school systems: (1) the organizational units, (2) the number of teachers employed, (3) the ratio of administrative and supervisory personnel to administrative units, (4) the number of schools, (5) the annual operational expenditure on a per pupil basis, (6) the percentage of the staff belonging to a local educational association, and (7) the approximate distances between the systems and the participating colleges and universities.

The responses were next tabulated to determine the extent to which the cooperating school systems were controlled in their participation. More specifically, to what extent was their participation affected by: (1) existing rules and regulations, (2) requirements involving priorities and limitations, (3) contractual agreements, (4) local advisory committees, and (5) their own administrative personnel?

The responses were further tabulated to identify the systems that were participating in each of the various types of field experience programs. The responses from the systems participating in each of the programs were next tabulated to determine the frequency with which the systems were utilizing certain specified administrative procedures. The administrative procedures considered were those that were utilized in: (1) the application process, (2) the placement process, (3) the supervisory program, (4) the selection program, and (5) the provision of remuneration or recognition. The current effectiveness of each administrative procedure was ascertained by determining the frequency with which each respondent evaluated it as "Highly Satisfactory," "Satisfactory," or "Unsatisfactory". When appropriate, the responses were also tabulated to determine whether or not specific admin-

istrative procedures were related to certain system characteristics and to discover if the characteristics of the school systems differed for each type of professional field experience program.

REVIEW OF THE LITERATURE

The literature which pertained to the present study was divided into three categories: (1) previous studies which approached the professional field experience programs from the point of view of the cooperating school systems; (2) previous studies which approached the professional field experience programs from the point of view of the teacher education institution or the student participant; and (3) the existing standards, guides, or recommendations of the various professional associations that have an interest in the professional field experience programs. While substantial data were available in the second and third categories, relatively little information existed concerning the administrative role of the cooperating school systems. Most of the research thus far has centered on the institutional phase of the program or the attitudes and the problems of the student participants. The existing standards, guides, and recommendations pertained almost exclusively to the institutional program and responsibilities.

FINDINGS

1. *The Characteristics of the Cooperating School Systems.*—The school systems were found to parallel the national distribution in organizational pattern; the largest number were unified city school districts. More than 50 per cent of the systems employed between 200 and 500 teachers, and their administrative staff to administrative unit ratios were usually between 1.51 and 1.75. Their average expenditure per pupil in average daily attendance was approximately $415, and they regularly reported professional staff membership in local education associations in excess of 75 per cent.

2. *The Rules and Regulations that Affected the Participation of the Cooperating School Systems.*—Rules and regulations were infrequently reported, and in the few systems where they did exist, they tended to be general and permissive. A minority of the systems engaged in the practice of either granting priorities or limiting their participation to certain institutions. Whenever these practices were utilized, they were based primarily on the reputation of the institution and the improved working relationship between the institution and the system. Formal contractual agreements were reported by 29 per cent of the systems, and the provisions usually pertained to the student teaching programs. Local advisory committees on professional field experiences were reported by 28.9 per cent of the systems, and they were usually organized by the superintendent. Approximately three-fourths of the systems administered their programs on the system level, and they assigned this responsibility to twenty-five different positions within their administrative organizations. The personnel involved usually carried this responsibility in addition to their other regularly assigned duties.

3. *The Observation Programs.*—Opportunities for observations and limited

participation were provided by 248 or 93.2 per cent of the 264 school systems participating in this study. The systems tended to prefer an arrangement whereby the contacts were made by institutional representatives and not individual students. The majority of the systems cooperated with three or more institutions, and they employed some form of centralized control when accepting applications and assigning student observers. Once the observer had been assigned to a given school, the system encountered little difficulty in making the arrangements necessary to provide a worthwhile professional educational experience for the student. The systems regularly considered the desires of their teaching staffs and the specific requests of the institutions when assigning student observers. However, they maintained a single reservation—the right to protect individual staff members from excessive demands. The systems usually attempted to schedule the observations equitably throughout all their schools, and they also imposed some degree of control over the number of observers and the frequency of observations. Most of the systems could have assumed a greatly expanded role in the student observation program without over-taxing their personnel and facilities.

4. *The Student Teaching Programs.*—Student teaching programs were reported by 255 or 96.6 per cent of the 264 systems participating in this study. Many of the provisions made for student teachers paralleled those made for student observers. The systems preferred to deal with institutional representatives and not with individual student teachers. The systems attempted to honor the preferences of the institutions and the student teachers when making assignments; however, they usually did not consider requests for placements with individual teachers.

The systems regularly considered specific criteria when they selected their cooperating teachers, and they placed the greatest emphasis on demonstrated teaching competence as reflected in the principal's and supervisor's recommendations. The practice of providing appropriate training for cooperating teachers was not well established, and there was no general agreement as to how it could best be provided. There was a great diversity of practice in the area of remuneration for cooperating teachers. Some systems prohibited this practice, while others permitted it. In some instances, systems even tolerated substantial variations in the amount of the cash fees paid by the institutions.

The assignment of responsibility for the supervision and evaluation of student teachers posed no great difficulty for the cooperating systems. Generally both activities were considered the primary responsibility of the institutional representative and the cooperating teacher. The principals were frequently involved, but the supervisory staffs of the systems were mentioned infrequently. Most systems felt that the institutional supervision was adequate, and they readily allowed the student teachers an opportunity to assume full responsibility for the classes.

The typical cooperating school system was extensively involved in the student teaching program. It accepted student teachers from four different institutions, and it usually placed an average of eighty-two student teachers. Approximately 30 per cent of these student teachers subsequently accepted positions as regular faculty members in the systems where they practice taught.

5. *The Teaching Internship Programs.*—Teaching internship programs were

reported by 62 or 23.5 per cent of the 264 systems participating in this study. These systems did not differ significantly from all the systems included in the study. However, the better-financed and the city systems tended to participate more often in the teaching internship program than did any other type of system. The institutions were primarily responsible for the selection and the supervision of the teaching interns; however, the interns were usually employees of the systems, which issued their contracts, paid their salaries, and provided their benefits. The typical intern usually assumed full responsibility for a number of classes for at least one semester, and he usually held a provisional or a temporary teaching certificate.

The retention rates for the teaching internship programs were substantially higher than those for the student teaching programs. However, the internship programs were small and selective, inasmuch as the typical system accepted thirteen interns from approximately two institutions in the course of the school year 1960–61.

6. *The Administrative Internship Programs.*—Administrative internship programs were reported by 39 or 15 per cent of the 264 systems participating in this study. These systems resembled all the systems participating in this study, with two exceptions: substantially fewer systems with administrative internships were city school systems, and the small systems tended to participate more often than the larger systems did. Eleven of the 39 systems with administrative internship programs reported that they operated their programs independently of any institutional affiliation. The systems exercised greater initiative and responsibility in administrative internship programs than in the teaching internship, the student teaching, or the observations programs. Specifically, they played a greater role in the selection and the assignment processes. They also provided most of the financial support that the interns received.

The retention rates for the administrative internship programs approximated the rates of the teaching internship programs. This program was also small and selective, inasmuch as the typical system accepted two interns from a single institution during the school year 1960–61.

7. *Programs Designed for Educational Specialists.*—Programs for educational specialists were reported by 91 or 34.5 per cent of the 264 systems participating in this study. The characteristics of these systems were similar to the characteristics determined for all the systems participating in the study, with one exception. The systems with specialists programs were larger than average. In making arrangements for this type of field experience, the systems usually utilized the same methods and procedures that they regularly employed in their other programs; and the institutions often provided some form of remuneration for the systems' personnel who supervised the trainees. The systems provided related field experiences for twelve different types of educational specialists, and the most frequently reported specialties were speech therapists, counselors, and school psychologists.

8. *Provisions for Coordinating Professional Field Experiences within Metropolitan Areas.*—Twelve different organizations had attempted to provide some degree of coordination for the professional field experience programs within metropolitan areas, and approximately 25 per cent of the systems reported that they had engaged in this activity during the school year 1960–61. However, no one organiza-

tion or plan had been very successful. Approximately 23 per cent of the systems that had not participated in any attempts to coordinate the programs within their areas reported that they felt that some form of coordination was required. The remaining 52 per cent of the systems either felt no need for coordinating programs or had no opinion about them.

CONCLUSIONS AND RECOMMENDATIONS

An analysis of the responses given on the various sections of the questionnaire indicated that the cooperating school systems were making an extensive contribution to the continuous development of the profession through their participation in a variety of professional field experience programs. The individual systems utilized a number of different administrative practices and procedures to regulate and control their participation, and they regularly evaluated these practices and procedures as either "Satisfactory" or "Highly Satisfactory". The school systems did not experience any substantial difficulty with their own administrative practices and procedures. However, the results of this study indicated that several existing conditions were adversely affecting the administrative tasks and roles of the cooperating school systems. These conditions included:

1. The limited participation of the members of the professional staffs in the development of policies which pertained to the professional field experience programs,
2. The limited financial, administrative, and professional support provided by most school systems,
3. The extensive variations in programs which resulted from the typical system's involvement with two or more institutions,
4. The absence of any coordinating agency or group within most metropolitan areas,
5. The incidental emphasis given to the roles and the responsibilities of members of the profession and the cooperating school systems in most existing standards and guides.

The following recommendations were made to alleviate these conditions:

1. The cooperating school systems should provide greater opportunities for their professional personnel to serve in advisory capacities and to participate in policy development.
2. The cooperating school systems should provide additional funds in a modest amount to provide the additional time and materials necessary to improve the programs, and they should also place a greater emphasis on the value of the professional field experience programs in the future.
3. The profession as a whole should formulate a more specific official position concerning the preferred types of field experience programs, and it should also establish a consistent point of view concerning the need for remuneration.
4. The professional field experience programs within metropolitan areas should be coordinated through the joint efforts of the directors of student teaching or the directors of professional field experiences from the institutions and the one or two

staff members who were usually responsible for administering the programs in each of the systems included in this study.

5. The member associations of the National Council for Accreditation of Teacher Education should establish standards and guides that would more fully define the roles and the responsibilities of the cooperating public school systems and their professional personnel.

The findings of this study suggested the need for further research in the following areas:

1. The factors that teacher education institutions consider when they select their cooperating school systems should be identified.

2. The attitudes of the various member groups of the profession towards the remuneration practices utilized in the student teaching program should be determined.

3. The preferred characteristics of each of the various field experience programs should be established from the point of view of the cooperating school systems.

4. The reasons why the internship programs have met with limited acceptance should be established.

AN ANALYSIS OF A MID-CAREER DEGREE PROGRAM FOR THE UNITED STATES ARMY WAR COLLEGE: 1960–1962

by ROBERT WHITTINGTON ELLER*

This is a descriptive study of a mid-career graduate degree program for the United States Army War College which includes analysis of the degree itself. The program is offered by The George Washington University to students attending the United States Army War College. The University, through the College of General Studies and in cooperation with the School of Government, Business, and International Affairs, operates a cooperative center at the War College. The program

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at the center leads to the degree of Master of Arts in International Affairs, which is awarded through the College of General Studies.

The role of the military officer in today's social structure more nearly resembles that of his civilian counterparts than in former decades of American history. Officers today are assigned to joint and allied staffs, overseas assistance posts, and high-level planning jobs. The military establishment has acknowledged the need for certain of its officers to receive education at civilian institutions when it is unavailable at service schools.

The educational background of the military officer at the various service schools is of a professionally oriented nature necessary for the development of a competent career officer corps. By the time the officer has had 15 to 20 years of service and has attained the rank of Lieutenant Colonel or higher, he may be assigned to one of the five senior service schools for officers. Two of these schools, located in Washington, D. C., are of a joint nature. The National War College emphasizes the strategic coordination of political and military leadership as well as the influence upon this leadership of technological or sociological developments in this country and throughout the world. The curriculum of the Industrial College of the Armed Forces is weighted more heavily in the areas of defense mobilization and management as well as in procurement of supplies.

The curriculm of the United States Army War College at Carlisle Barracks, Pennsylvania, is similar to that of the National War College. The Naval War College at Newport, Rhode Island, and the Air War College at Air University, Maxwell Air Force Base, Alabama, offer similar curricula. The United States Army War College, which is used in this study as a representative senior service school, offers these three broad areas of study:

National Power and International Relations
Military Power and National Security Policy
National Strategy and Military Program

This curriculum is designed to develop, in senior military officers, the ability to participate in planning and directing national strategy.

Through its program of study for officers at civilian institutions the Army has sought to up-grade the quality of the military establishment rather than the quality of the individual officer. Since World War II, certain officers who required graduate degrees for specific assignments were sent to civilian universities, usually for a period of two years, in order to fill the needs of the Army. A "bootstrap" program of 6 months of graduate study at the expense of the individual officer was initiated by the Army.

The regulation under which the cooperative program between The George Washington University and the United States Army War College operates is the General Educational Development authority. Up to 75 per cent of tuition costs for off-duty study at civilian institutions is paid by the Army. Such study must be justified as necessary to meet the personnel needs of the Army.

The idea of such a cooperative program with the United States Army War College orginated in 1952 with President Cloyd Heck Marvin and Dean Mitchell Dreese of the College of General Studies, The George Washington University. Action toward establishment of the program was not taken until 1960. Negotiations between

General William P. Ennis, Commandant of the United States Army War College, and acting President of the University, Oswald S. Colclough, resulted in the opening of the center at the War College in September of 1960. By August 1962 centers were operational in all five of the senior officer schools of the military establishment. All negotiations were conducted with the concurrence of Dean Grover L. Angel of the College of General Studies and Dean Archibald M. Woodruff of the School of Government, Business, and International Affairs.

The University Center at the United States Army War College is administered by Dr. C. Edward Galbreath, the resident director, who is a member of the University faculty. He is assisted by a part-time visiting faculty. The curriculum consists of 15 semester hours of University courses; a thesis, which carries 6 semester hours; and 9 hours of War College courses. Foreign language requirements are waived.

Data for the study were obtained by means of a questionnaire designed to elicit listings of attitudes from the 291 members of the Army War College classes of 1960-61 and 1961-62. Additional information was secured through personal interviews at The George Washington University and the War College.

A chi-square technique was employed to determine the significant responses from the officers who replied. Sixty-two per cent of those officers who were sent questionnaires responded. Of this group, these objectives were most frequently reported as the most important for the program:

1. Up-grading the students' depth of understanding of the complexities of international affairs
2. Opportunity for senior military personnel to acquire additional education.

Of the respondents who checked the above objectives as most important, these were felt to be the best prospective students:

1. Those with the capacity for concentrated study and/or above-average scholastic ability.
2. Those with a special interest in the field of international affairs.

The enrollment conditions listed above have not been met by the cooperative program. These conditions of enrollment, if met, would reduce the number of participants in the program and would undoubtedly reduce the effectiveness of the graduate program for other war college students who might be interested in obtaining a graduate degree regardless of the field of specialization.

Among the objectives of the University in establishment of the center was a desire to obtain experimental programs. Through the College of General Studies equivalent credit was granted for work done at the military institution, but only after University representatives had rated the program at the War College as academically sound. By further assuring itself that academic standards of the University were not compromised, the University was ready to integrate a graduate curriculum in liberal arts with the professional War College program designed for officers at mid-career.

Objectives of the Army included an interest in preparing qualified officers for specific positions which require graduate degrees. A desire on the part of the mili-

tary establishment to gain "academic" acceptance was undoubtedly a motivating factor toward participation in the program.

Among the probable objectives of the individual officers in the program were the interest in obtaining graduate degrees and the desire to prepare for second careers after retirement from the service. Of definite interest to a large group of officers at the United States Army War College was the opportunity to obtain graduate degrees in the area of international affairs or diplomacy.

The present program satisfies those officers who want a liberal arts degree. It is possible that some would prefer a professional degree with specialization in international affairs or some aspect of public affairs. The interests of the Army as a whole might be met by conversion or expansion of the degree program along these lines. The University should be able to more easily maintain academic standards in its program if credit for theses and other advanced standing could be coordinated with a specialized degree offering, since the curriculum of the United States Army War College is professional in nature. A 30-hour, specialized degree, as opposed to the traditional professional degrees which may require as much as 60 hours for completion will be necessary if the integrated program with the War College is to continue. Time limitation of War College assignment of officer students does not permit the completion of a 60-hour program.

The academic schedule of the University does not lend itself easily to the 10-month United States Army War College schedule. After some adjustments, the program has been divided into a trimester plan, with 4 credit hours of course work offered in the fall trimester; 4 hours in the spring trimester; 7 hours, divided into two courses, in the summer trimester.

The College of General Studies has been responsible for the management and administration of the center, while the School of Government, Business, and International Affairs has had jurisdiction over the faculty and curriculum. No appointments or changes are made without the concurrence of both of these divisions of the University.

During the first two years, the United States Army War College adopted a "hands-off" policy toward The George Washington University Center.

The University and the War College should cooperate in an evaluation of the program in an effort to improve its offerings and administration.

THE MARYLAND STATE TEACHERS COLLEGES: A STATUS STUDY—1962–1963

by DONALD THOMAS McNELIS*

The purpose of this study was to present data showing the present status of the state teachers colleges in Maryland. After a preliminary examination of the problem it became evident that four major areas were related to the subject in such a way that they should be studied as part of the general problem. The areas were singled out for individual investigation because it seemed likely that by focusing attention successively on each of these subordinate problems it would be possible to obtain a better insight into the current status of the Maryland state teachers colleges.

The four areas selected for study and analysis were: (1) the relationship of the Maryland state teachers colleges to other institutions of higher education in the state; (2) trends in enrollment patterns in the Maryland state teachers colleges; (3) the existing conditions with respect to the qualifications of the teaching staff in these colleges; and (4) general information concerning personnel services, teacher education curricula, and library and plant facilities.

The historical background of the Maryland state teachers colleges was also reviewed in order to secure perspective which would aid in an understanding of the present status of these colleges.

PROCEDURE

The initial step in this investigation was to secure permission from the State Department of Education of Maryland and the presidents of the five state teachers colleges.

As a next step in the investigation an effort was made to assemble and organize a body of data which would make possible an adequate analysis of the above problems. The complexity of the original problem plus the divergent subordinate problems quite naturally suggested that not only would a large number and variety of facts be needed but the necessary information would, undoubtedly, have to come from several sources.

The historical materials used in the study were secured in the Maryland Room of the University of Maryland Library, the Professional Library of the State Department of Education, and the Library of Congress. Primary sources consulted were all of the Maryland statutes concerning the state teachers colleges which have been enacted in the history of the State, the latest codes and laws, and all of the

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Annual Reports which have been issued by the chief school officers of Maryland. In addition, a number of books were reviewed as secondary sources.

Analysis of the relationship of the Maryland state teachers colleges with other institutions of higher education in the State was based upon an examination of the current catalogues of the various colleges. The *Annual Reports* of the State Department of Education were also reviewed with reference to certain aspects of this segment of the study.

The principal source of data related to the enrollment patterns of these colleges was secured from the *Annual Reports* of the State Department of Education.

A two-page questionnaire was constructed for the purpose of securing data related to the qualifications of the teaching staff in these colleges. The questionnaire was divided into four sections. Section I dealt with personal information, Section II dealt with academic preparation, Section III dealt with previous employment related to teaching, and Section IV dealt with current status.

To gather data about student personnel services, curriculum programs, and library and plant facilities, a twelve-page questionnaire was constructed and sent to the presidents of the five colleges. Data were also secured from the current catalogues of these colleges and personal interviews with various administrative personnel in these colleges.

Further information about the teachers colleges was secured from various bulletins, monographs, commission reports, and pamphlets published by the State Department of Education and the individual colleges.

REVIEW OF THE LITERATURE

Since the education of teachers has emerged as one of the major unsolved problems of our times, it is only natural that there should be numerous studies connected with the education of teachers. Studies have been made dealing specifically with one area or aspect of teacher education, while others have dealt with a combination of related aspects. Some have been concerned with all colleges within a state, while others have been concerned with liberal arts colleges or teachers colleges. Since this study was specifically concerned with the state teachers colleges in the State of Maryland, a thorough search of the literature was made to locate similar studies in other states. The writer was unable to locate a state-wide study dealing with the combination of aspects involved in this study; however, he was able to locate a number of doctoral research studies in other states dealing with one or more aspects of this study. Also, he was able to locate several state-wide studies published by state boards of education, legislative commissions, or professional groups. Those dissertations and studies most pertinent to the present Maryland study were reviewed and analyzed.

SUMMARY OF THE FINDINGS

Institutions of Higher Education in Maryland in Relation to the Maryland State Teachers Colleges

There are 45 state-approved institutions of higher education in the State of Maryland. Of this number 16 are two-year colleges; the remaining 29 are four-year

colleges. Twenty-one of the 29 four-year degree-granting institutions of higher education in Maryland have state-approved teacher education programs. Of the 21 colleges with approved programs in teacher education, 8 are state controlled; 13 are privately controlled. Five of the 8 state-controlled colleges are state teachers colleges; the other 3 are: Maryland State College, Morgan State College, and the University of Maryland. The 13 colleges not controlled by the state include 6 privately controlled and 7 denominational colleges.

Of the 21 institutions with approved programs, 19 prepare teachers for the secondary school; 2, for the junior high school; 13, for the elementary school; 5, for kindergarten-primary programs; and only one, for nursery school education. All 5 of the state teachers colleges offer programs for the preparation of elementary teachers; 3 also offer programs to prepare kindergarten-primary teachers. Three of the state teachers colleges offer programs to prepare teachers on the secondary level; a 4th is currently offering a program to prepare teachers for the junior high school area, but is in the process of expanding this program to include secondary education.

Thirty-one areas in general education and 5 areas in vocational education were offered by the various schools which have secondary programs. It was found that while there were some areas of secondary preparation offered by as many as 15 colleges, there were other areas offered by only one or two schools.

Twenty of the 21 institutions were accredited by the Middle States Association of Colleges and Secondary Schools; only 4 (the State Teachers College at Frostburg, the State Teachers College at Salisbury, the State Teachers College at Towson, and the University of Maryland) have programs approved by the National Council for the Accreditation of Teacher Education.

An analysis of the number of students who graduated from the Maryland institutions of higher education and who qualified for standard teaching certificates in the State of Maryland over a ten-year period revealed that 44.5 per cent of the 10,304 students graduated from one of the 5 state teachers colleges.

The findings presented here show that the 5 state teachers colleges play an important role in preparing teachers within the State of Maryland for future teaching positions. These findings further show the character of the state teachers colleges in relation to all four-year colleges and their role in the educational system of the State in preparing teachers.

Student Enrollment Patterns in the Maryland State Teachers Colleges

There has been a rapid growth in the 5 state teachers colleges from the standpoint of student enrollment. The following factors concerning student personnel have figured in the development of these colleges:

1. The combined enrollment of these institutions continued to increase throughout the thirty-one year period investigated. The impact of World War II was clearly demonstrated in the low enrollments of that period followed by the large enrollments of the immediate post-war period. The total enrollment in the 5 colleges has increased from 1,020 students in 1932 to 4,412 in the fall semester of 1962, or more than four times the number of students in 1932. While the 5 colleges have

shown enrollment gains during these years, the per cent of increase at Frostburg and Towson has been the greatest.

2. The colleges, as originally planned, continue to serve students whose homes are relatively near the institutions they attend. It was found that 72.3 per cent of the students enrolled in the teacher education curricula in the 5 colleges from 1952 to 1962 lived in the county in which the college was located or the adjoining counties. Of the remaining 27.7 per cent, 24.8 per cent were from other sections of the state; 2.9 per cent were from out-of-state. An analysis of the individual colleges with reference to the geographic origin of the students revealed that only the State Teachers College at Frostburg has had what one might call a "radical change" in the student distribution. The per cent of the students in the teacher education curriculum at Frostburg from the county in which the school is located or the adjoining counties dropped from 95.1 per cent in 1952 to 44.2 per cent in 1962.

3. In comparing the enrollment patterns in the liberal arts program with the total enrollment in the three colleges that offer this program, it was found that, while total enrollment has more than doubled in the last sixteen years, the number and percentage of students enrolled in the liberal arts program has decreased. The per cent of students in the liberal arts program whose homes are in the county of the school or the adjoining counties has remained somewhat constant. It was found that 84.9 per cent of the liberal arts students who enrolled in the liberal arts curriculum from 1952 to 1962 lived in the counties in which their colleges were located or in adjoining counties. Of the remaining 15.1 per cent, 11.2 per cent were residents of other sections of the state; 3.9 per cent were out-of-state students.

During the thirty-one-year period studied, the colleges enrolled a total of 57,405 students or approximately 1,852 per year. The total enrollment varied from a low of 649 in the fall of 1944 to a high of 4,412 in the fall of 1962.

As revealed by these findings the total enrollment in the 5 colleges has had a substantial growth. While all the colleges have increased in total enrollment the state teachers colleges at Frostburg and Towson have had the greatest increases. Four of the colleges continue to serve the general area of the state in which they are located; while Frostburg, although still enrolling a large number of students from its area, currently enrolls more than 50 per cent of its students from outside its immediate area. The findings further show that the per cent of students in the liberal arts program and the number of students has decreased in the three colleges which offer this program, while the total enrollment has more than doubled.

Qualifications of the Teaching Staff in the Maryland State Teachers Colleges

Analysis of data secured from 75.5 per cent (200 of 265) of the faculty members of the Maryland state teachers colleges during the fall semester 1962 reveals the personal and professional background of the teaching staff of these institutions.

This analysis showed that 138 or 69.0 per cent of the staff members were men; 62 or 31.0 per cent were women. The mean age for the faculty personnel was 41.8 years. Women were older than men by 1.9 years. The mean age for men was 41.1; that for women was 43.0. Only 37 or 18.5 per cent of the staff members were

born in the State of Maryland. The remaining 163 were born in 33 states, the District of Columbia, and 7 foreign countries.

Distribution of the teaching personnel among the several ranks showed that 48 or 24.0 per cent held the rank of professor, 56 or 28.0 per cent held the rank of associate professor, 58 or 29.0 per cent held the rank of assistant professor; the remaining 38 or 19.0 per cent held the rank of instructor. The academic standing of the teaching personnel of these institutions, in terms of highest degree held, showed that 34.5 per cent held the Doctor's degree; 62.5 per cent held a Master's degree; 3.0 per cent held only a Bachelor's degree. Eighty-six staff members who did not have the doctoral degree had completed some type of graduate work beyond their highest degree.

The data showed that these institutions are attempting to attract teaching personnel from as many different institutions of higher education as possible. The faculties of these colleges received their highest degrees from 69 different institutions in 30 states, the District of Columbia, and one foreign country. Thirty-two or 16.0 per cent of the staff members received their highest degrees in the State of Maryland. Teachers College of Columbia University, with 24 graduates now teaching in the state teachers colleges, has been the leading source of staff members. The University of Maryland ranked second with 23 or 11.5 per cent.

Seventy-eight per cent (156 of 200) of the faculty members who returned the questionnaire had teaching experience on the elementary or secondary level; 116 or 58.0 per cent had college teaching experience prior to their current teaching positions. Forty-eight of the staff members began their teaching in these institutions in the fall semester 1962; the range of experience within these institutions varied from 1 to 34 years, with a mean of 6.1 years for the entire staff. The mean length of total experience on all levels of education was 15.9 years.

Of the 200 staff members, 155 or 77.5 per cent had undergraduate majors in the area in which they are currently teaching; 92.5 per cent of the 199 staff members who had undertaken graduate study majored in their current teaching fields. The number of semester hours in the undergraduate major varied from a high of 68.5 for the staff members in the department of music to a low of 31.3 in the department of foreign languages; the average number for the entire staff was 41.4. At the graduate level the number of semester hours in the major area varied from a low of 37.4 for the staff members in the department of health and physical education to a high of 59.0 in the department of science. The mean for the entire staff on the graduate level was 49.1 semester hours. Only 15 or 7.5 per cent of the staff did not have a graduate major in the area in which they were teaching.

The number of semester hours in professional education courses varied from a low of 19.8 for the staff members in the department of foreign languages to a high of 68.6 in the department of education and psychology; the mean for the entire staff was 33.9.

The average teaching load was 15 semester hours; the median number of courses carried by each staff member was three. The salary ranged from a low of $5,000 to a high of $9,500, with a mean of $7,535.05.

These findings show that the faculty of the 5 colleges have a wide range of educational experiences and adequate professional training. These findings further

indicate that those charged with the responsibility of hiring faculty members are making every effort to secure staff members who are not only well qualified in the area in which they teach but who have also had prior teaching experience in schools and colleges.

Personnel Services, Teacher Education Curriculum, and Library and Plant Facilities

Each of the 5 colleges has a structured program for recruitment of teachers. Procedures and media which have been established by the 5 colleges include: participation by college personnel in high school career day programs, planning special events and programs for on-campus visits of high school students, and disseminating information by means of college catalogues.

Since the 5 colleges are under the control of the State Board of Education, general admission requirements have been standardized; however, each of the 5 colleges has established a program of continuous selection throughout the student's college program.

In effect each of the colleges offers the same program in the area of general education. Analysis of the current catalogues of the colleges revealed identical subject matter areas of general education with some minor differences in the courses required under the subject division. In the kindergarten-primary curriculum as well as the elementary curriculum, 67 semester hours or 52.34 per cent of the total program required for graduation are in the area of general education; on the junior high school and secondary level, 52 semester hours or 40.63 per cent are in the area of general education.

An analysis of the professional sequence showed that in 4 of the colleges an introductory course in professional education is offered in the freshman year, while in the other college the professional sequence does not begin until the junior year. Thirty semester hours or 23.44 per cent of the total program of 128 semester hours makes up the professional area on the kindergarten-primary and elementary level; while 22 semester hours or 17.18 per cent is devoted to professional education on the junior high and secondary level. Each of the colleges has a well planned program with regard to professional laboratory experiences preceding student teaching. Observation and child-study projects were the most common laboratory experiences reported.

The student teaching experience at all colleges and in all courses of study have an important role in the pre-service education of the prospective teacher. The student teaching experience constitutes a minimum of one-third of the professional education sequence in all programs for the preparation of teachers at the 5 colleges.

All 5 colleges make some provisions for placement of their graduates; however, none of the colleges have a central placement office or a full-time director. Only 3 colleges are follow-up services carried on in a formal manner. None of the colleges reported that they systematically provide opportunities for teacher education graduates who have been out of school 3 to 5 years to appraise the strengths and/or weaknesses of the teacher education program which they completed. However, they all follow-up their graduates to appraise the strengths and/or weaknesses, though not systematically.

The library facilities are much improved since the 1941 survey of the public schools and teachers colleges was conducted. Today on the campuses of 4 of the 5 colleges are modern, well equipped and functional library buildings. Only the State Teachers College at Frostburg lacks a separate library building. Frostburg was also the only school which indicated a need to strengthen its library resources.

The State of Maryland has more than twenty-six million dollars invested in the buildings, equipment, and grounds of the 5 colleges. Although all the colleges have excellent plant facilities, each of the 5 presidents indicated that there was a definite need for plant improvement and more educational facilities in order to provide better educational programs.

As revealed by these findings the colleges are making every effort to recruit, admit, and retain the best qualified students in the teacher education program. The colleges are also making an effort to have a sound and well balanced educational program including general, professional, and academic preparation. In the education of the prospective teacher the colleges are attempting to provide meaningful laboratory experiences as well as adequate student teaching experiences.

An apparent weakness of several of the colleges is that of providing adequate follow-up services. All colleges are also in need of more plant facilities in order to provide a more effective educational program.

RECOMMENDATIONS

In view of the findings of this study, it is recommended that:

1. All colleges be encouraged to develop teacher education programs to meet the standards of the National Council for the Accreditation of Teacher Education.

2. In any expansion of the current offerings on the secondary level, the state teachers colleges should consider developing areas in which other institutions of higher education in the State of Maryland are not currently providing curriculum offerings or in which offerings are limited to only one or two schools.

3. Increased attention should be given to placement services. Also in order for the institutions to determine the effectiveness of their teacher education programs and to provide valuable services to beginning teachers, it is suggested that a systematic program of follow-up services to teachers be inaugurated in each of the state teachers colleges. It is further suggested that all 5 institutions should engage in a joint study of the problem of following up graduates after they have entered the teaching profession.

4. The general education of the secondary education majors should be expanded to include a minimum of 50 per cent of the total program required for graduation. On the elementary level a program should be established at each of the 5 state teachers colleges to provide an area of limited academic specialization.

5. Those charged with the responsibility of staffing the state teachers colleges should make every effort to secure staff members adequately prepared in their respective subject areas. The present faculty should be encouraged to continue to improve their level of competency.

6. Every staff member should have a minimum of a Master's degree in the subject area in which he is teaching. Those staff members currently teaching in

fields other than their graduate majors should be encouraged to obtain stronger backgrounds in their teaching areas.

SUGGESTIONS FOR FURTHER RESEARCH

As this study was conducted, certain needs for further research became apparent. Some of the areas in which research appears to be most needed are:

1. A study should be made of the buildings and building needs of teachers colleges.

2. An evaluative study of the professional undergraduate program of teacher education in all of Maryland's senior colleges and universities should be made.

3. A state survey of the predicted needs of teaching personnel in the various areas of secondary education should be made in order to offer some direction to the state teachers colleges in the expansion of their current program offerings.

4. A status study, similar in scope and nature to the present study should be made within a ten-year period in order that the accumulated findings may form a working basis for guiding the educational progress of these institutions.

AN INVESTIGATION OF STUDENT PERSONNEL WORK IN SMALL COLLEGES

by LABAN PEACHEY*

INTRODUCTION

In American higher education a program known as "Student Personnel Services" has slowly developed since 1900. These services were necessary to meet the varied nonclassroom needs of students in a changing social structure.

In the last two decades, workshops, college courses, professional meetings, and research have concerned themselves extensively with the role, function, and problems of student personnel work in higher education. Little work has been done recently to consider the function of student personnel work in the small college.

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PURPOSES

This study assumes that the chief goals of the college are academic. The student personnel services contribute to a climate that is conducive to good scholarship. The purposes of this study were:

1. To investigate the over-all status and characteristics of personnel services in small colleges
2. To compare their patterns of organization and their programs of student personnel work with generally accepted standards
3. To identify principles that will aid a college in improving student personnel services
4. To determine whether the staff and resources of the small college limit the extent to which the student personnel services can meet student needs.

NEED FOR THE STUDY

Such a study was needed because most of the research and experimentation in student personnel services had been concerned with larger institutions, where a more elaborate organization is in effect. Purposes and settings of small colleges were sometimes emphasized, but little research on the specific needs of the small college had been undertaken.

REVIEW OF RELATED LITERATURE

A brief historical view of higher education in colonial days was presented. While the nonintellectual aspects of student life were of less consequence in earlier days, higher education was always concerned with the nonacademic, personal life of the student.

As the number of persons seeking higher education increased, there were new forces in society which changed collegiate life. During the decade of the 1920's, the American Council on Education gave active leadership in the development of what is now "Student Personnel Services". The development of testing was a part of and contributed to student personnel services as we know them today. By 1930 student personnel services became well established in some of the better colleges, both large and small. Subsequent development was influenced by a great depression and a global war.

Several studies were then reviewed from the late 1950's which show that the needs for student personnel services in the small liberal arts college are similar to those in the large university. Administration and method of implementing these services differ in the small college. These studies indicate that the small college has tended to neglect the noninstructional aspect of student life.

RESEARCH PROCEDURE AND METHOD

The population selected for this study consisted of the membership of the Council for the Advancement of Small Colleges (CASC). A questionnaire was built based on an extensive study of student personnel bibliography. The purpose of the study was not to evaluate the student personnel services, but to survey over-all pra

tices. The questionnaire included the following items: general information, staff, organization, and the following services, as outlined by the American Council on Education:

- Selection for admission
- Records
- Counseling
- Health service
- Residence and dining service
- Student activities
- Financial aid
- Placement
- Discipline
- Special clinics
  - Remedial reading
  - Study habits
  - Speech and hearing
- Special services
  - Student orientation
  - Veterans' advisory service
  - Foreign student program
  - Marriage counseling
  - Religious activities and counseling

An evaluation scale with responses from minus one to plus three was provided for each of the services. The questionnaire was administered to an organization workshop. All colleges participating in the workshop completed the questionnaire. Fifty-one colleges with a mean enrollment of three hundred seventy made up the population. Thirty-six colleges were Protestant, ten were Catholic, and five were governed by independent boards. The questionnaires were carefully analyzed and the responses were presented in tabular form.

FINDINGS OF THE STUDY

The findings were not concerned primarily with evaluating the colleges, but as the data were tabulated some over-all recommendations emerged.

Most of the student personnel staff were also classroom teachers. Few had educational experience relevant to their student personnel assignments. The student personnel worker was generally a man of many tasks, performing various roles in the institution.

Half of the colleges stated that the student personnel program was centralized. Most staff members held the title of Dean of Students, Dean of Men, or Dean of Women. The Dean of Students was administratively responsible in the majority of the colleges. The organization was not strongly outlined nor well defined in most of the colleges. There was a spirit of informality that tends to prevail in small colleges. The attitude was generally held that the student services supplement the instructional program.

All colleges required a high school transcript for admission, and most required admission tests. Most colleges stated that they practiced selective admission: admission standards were determined by the objectives of the college and various attending circumstances.

All of the colleges had on file most of the records that one would expect to find. In most cases the records were equally divided between the Student Personnel Office and the Registrar's Office.

Counseling was given more attention in this study than any other service, because it was considered the central function of student personnel services. Most small colleges did not have professional counselors. Generally, counseling was limited to academic counseling, which was given by the faculty. Most personal counsel-

ing was handled by the office of the student dean and religious counselors. Specialized counseling was done on a referral basis. It was not clear from the study how extensively off-campus referral agencies were used, although more than two-thirds indicated they were readily available.

The provision of the colleges in the study for vocational counseling and placement of graduates was inadequate. Students who did not complete degree programs —a substantial number—received less help from the college in placement than do graduates.

The health services were reported as adequate. They depended on outside medical resources; only one-third had a physician on the staff. In most cases adequate dispensary and emergency services were available.

The housing and dining facilities seemed to be quite adequate. This study reflected that the family style, small enrollment atmosphere contributed positively to the nonclassroom experiences and personal development of college students.

The type of student activities in an institution is determined by the goals and personality of the college. Fraternities and sororities were infrequently reported, but a wide selection of student activities was reflected. Student government, social organizations, student publications, athletics, music and choral groups, and religious groups were dominant in more than 80 per cent of the colleges. The student activities were administered in most cases by the student personnel division and represented an important facet of student life.

More than 80 per cent of the institutions made federal loans available to students. The colleges have given considerable attention to scholarships and loans for students, however more finanicial aid is needed.

In the evaluation scales, discipline was listed as meeting the needs more fully than any of the other services. Eighty per cent of the colleges assumed active responsibility for social and moral conduct of students. All except two regarded their approach to discipline as remedial or educational rather than punitive. In 96 per cent of the colleges, the student personnel staff handled discipline cases. Discipline usually followed accepted student personnel practices.

While most CASC colleges did not provide a variety of special clinics, nearly half of them did offer some type of remedial reading.

Orientation was a part of the CASC program with few exceptions. Approximately two-thirds of the colleges provided an orientation course during the fall semester.

Nearly all the colleges had at least a few foreign students; 55 per cent had five or less. In approximately two-thirds of the colleges a foreign student adviser was designated.

Married students constituted a part of the student body in nearly all the colleges. The number of married men substantially exceeded the number of married women. Less than one-half of the colleges provided for special marriage or premarriage counseling.

Ninety per cent of the colleges were church-related. While the religious life was often managed by a department other than the student personnel, it was closely related to the student personnel services, and in some cases it was considered a part of the student personnel program.

Inasmuch as concern for the spiritual welfare of students was strong in CASC

colleges, the religious life program supplemented and materially strengthened the student personnel services in CASC colleges. A large number of colleges wrote free response comments indicating that discussion, fellowship, Bible study and prayer groups were provided either formally or informally. Students took the initiative in these small group activities. While the goals would be predominately religious, it may be assumed that these groups also provided expression for socialization and intellectual exchange.

SUMMARY EVALUATION TABLE

Following is a composite of the scales, with the number of colleges which evaluated themselves at the respective points on the scale. The researcher assumed that some respondents were over-conscientious and critical of their programs and others were not sufficiently critical. These evaluations should be interpreted as value judgments made in most cases by a member of the student personnel staff of the respective colleges.

Most of the responses were checked plus one, plus two, or plus three. The summary responses in the table can be ranked from high to low in three ways: (1) those checked under plus one; (2) those checked under plus three; (3) the combination of plus two and plus three. By ranking the responses in this way the services of Discipline and Student Activities were rated as most adequately provided by the colleges. The three services that were least adequately provided, ranked from the bottom were Placement, Counseling and Finanicial Aid.

SUMMARY OF EVALUATION SCALES OF STUDENT PERSONNEL SERVICES

N = 51*

Degree to which Over-all Service is Adequate to meet the Needs of Students

	−1	0	+1	+2	+3
Admissions		1	9	30	9
Records	1		10	26	14
Counseling		1	20	22	5
Health services		2	10	23	11
Residence and dining services	2	2	10	21	16
Student activities			6	28	16
Financial aid		2	16	23	8
Placement		4	22	18	4
Discipline	3		3	20	27

*The difference between 51 and any total represents the "no replies."

GENERAL OBSERVATIONS

Some guiding principles and general observations that emerged from this study were as follows:

1. Student personnel staff members in the small college were versatile individuals, addressing themselves to many facets of student life.

2. Student personnel work can be combined readily with teaching.

3. A Dean of Students headed the personnel program in the majority of colleges.

4. The student personnel staff needs a greater sense of professional identity.

5. The titles of "Dean of Students," "Dean of Men," "Dean of Women" were the most common designations for student personnel workers. There were some other variations.

6. Student personnel services in the small colleges were directly related to the instructional objectives of the college.

7. The coeducational colleges with very small enrollments and the men's or women's colleges were less concerned with organization of student personnel services than coeducational colleges where enrollment was increasing rapidly.

8. With some exceptions, all the services were offered by all the colleges.

9. The small college was properly dependent on outside resources for specialized functions such as psychological counseling, medical assistance, and special clinics.

There was nothing in the study to indicate that a small college by its nature or resources is unable to meet the personnel service needs of its students.

As a result of this study the researcher offers the judgment that qualified student personnel staff members with vision of the possibilities offered by the small college setting are in a position to give leadership in creating the ideal environment for an academic setting. Research on the influences of the academic and of group environment on the individual in the small college should be quite feasible, inasmuch as the possibilities to control or assess the influence of variables are greater in a small college than in a more complex and varied institution.

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The George Washington University

Bulletin



THE SCHOOL OF MEDICINE
1963-64

WASHINGTON 6, D. C.
OCTOBER 1962
Vol. LXII No. 2

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Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

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Doctor of Philosophy.....Dean of The Graduate Council

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School of Medicine—Research and Administration Buildings



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THE SCHOOL OF MEDICINE
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CALENDAR OF THE SCHOOL OF MEDICINE

1963-64

	1963	
FALL SEMESTER:		
Registration	Sept 12	Thurs
Classes begin	Sept 16	Mon
Veterans Day. Holiday	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
	1964	
Classes resume	Jan 2	Thurs
Tuition for spring semester due	Jan 10	Fri
Examination period	Jan 20–25	Mon–Sat
SPRING SEMESTER:		
Classes resume for spring semester	Jan 27	Mon
Winter Convocation. Holiday	Feb 22	Sat
Easter recess	March 27 and 28	Fri and Sat
Examination period	May 18–26	Mon–Tues
Memorial Day. Holiday	May 30	Sat
Baccalaureate Service	June 7	Sun
Commencement	June 7	Sun
REGISTRATION FOR THE ACADEMIC YEAR 1964–65	Sept 10	Thurs

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HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The George Washington University is a privately endowed University located on a well planned campus in the center of Washington within a few blocks of the White House. The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Medicine has had continuous approval by the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. The degree of the School of Medicine is recognized by all State Examining Boards.

LOCATION

The University is in downtown Washington within a few blocks of the White House and the Federal Triangle of Government buildings, which house many of the departments of the Federal Government, and such museums of special interest to medical students as the Smithsonian Institution, the National Museum, and the Botanic Gardens.

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Brian Blades, T. M. Brown, T. M. Peery, I. R. Telford, J. W. Watts, V. F. Ludewig

COMMITTEE ON ADMISSIONS

Paul Calabrisi, *Chairman*
G. F. Kelser, W. P. McKelway, F. N. Miller, J. E. Rankin

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* Faculty and committee members for the academic year 1962–63.
† The President of the University, the Dean of Faculties of the University, and the Registrar of the University are members of the Faculty.
‡ The Dean of the School of Medicine and Associate Deans are members ex officio of all committees.

COMMITTEE ON EDUCATIONAL POLICY

T. M. Peery, *Chairman*

E. M. Renkin, M. J. Romansky, J. F. Sadusk, Jr., J. G. Sites, I. R. Telford, J. R. Thistlethwaite, C. R. Treadwell

COMMITTEE ON SCHOLARSHIP

I. R. Telford, *Chairman*

Brian Blades, T. M. Brown, H. G. Mandel, F. N. Miller

COMMITTEE ON RESEARCH

C. R. Treadwell, *Chairman*

J. M. Evans, T. N. Johnson, H. G. Mandel, H. C. Pierpont, Harold Stevens

COMMITTEE ON LIBRARY

C. E. Leese, *Chairman*

Mary Robbins, C. S. Wise

COMMITTEE ON GRADUATE AND POSTGRADUATE EDUCATION

C. B. Ethridge, *Chairman*

Seymour Alpert, R. H. Barter, Brian Blades, Leon Yochelson, V. F. Ludewig

COMMITTEE ON APPOINTMENTS AND PROMOTIONS

Brian Blades, *Chairman*

T. M. Peery, C. R. Treadwell

ADVISORY COMMITTEE ON CANCER RESEARCH

L. K. Alpert, *Chairman*

Frank Allan, J. M. Bailey, C. T. Klopp, W. P. McKelway, William Newman, H. C. Pierpont, Mary Robbins, W. W. Saunders

ADVISORY COMMITTEE ON REHABILITATION

C. S. Wise, *Chairman*

J. P. Adams, T. M. Brown, J. M. Evans, Irene Tamagna, J. R. Thistlethwaite

ADVISORY COMMITTEE ON STUDENT AFFAIRS

F. N. Miller, *Chairman*

Seymour Alpert, J. B. Christensen, Ruth Henderson, H. C. Pierpont

GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of The George Washington University was opened in March 1825. Of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 as a part of the organization of the School. The present George Washington University Hospital was opened in 1948, and the Helen L. and Mary E. Warwick Memorial Building housing the Cancer Clinic was completed in 1954. Additional clinical facilities are used at the District of Columbia

General Hospital, Children's Hospital, St. Elizabeths Hospital, Mt. Alto Veterans Administration Hospital, Fairfax Hospital, and Washington Hospital Center. The School of Medicine maintains close affiliation not only with the various divisions of the University, but also with the numerous medical research and scientific establishments of the federal government in the Nation's Capital. Washington provides world renowned library facilities, comprehensive museums, and excellent recreational facilities which are available to students.

OBJECTIVES

The purpose of the School of Medicine is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever changing society. It is the responsibility of the School of Medicine to provide its students with a systematic plan of instruction in the basic medical sciences, with well guided clinical experience, with opportunities for expression in research, and with a philosophy in keeping with the highest ethics of the profession.

To achieve these objectives the School of Medicine has developed a progressive plan of instruction and a balanced, comprehensive curriculum. To carry out the program the University maintains a faculty of adequate size and of outstanding ability and makes use of facilities which provide exceptional opportunities for research and clinical training.

PLAN OF INSTRUCTION

The curriculum is a progressive one, beginning with basic medical science and expanding to include the more complex aspects of the prevention of disease and care of the sick. The teaching program is organized under the various departments of the School of Medicine. (See "Courses of Instruction", pages 41–59.)

The schedule for the first year begins with an orientation week designed to introduce the new students to the Faculty, to the upperclassmen, and to the environment for their medical education. The students meet for informal panel discussions with upperclassmen and members of the Faculty on such subjects as curriculum, medical terminology, use of library facilities, ethics and aims of the medical profession, and student health.

First year instruction is given in anatomy, biochemistry, and physiology using the classroom and laboratory facilities of the School of Medicine. Early in their medical careers students are encouraged to participate in research.

Having completed the preliminary study of structure and function of the normal body, the student progresses in the second year to a consideration of disease processes and mechanisms. The various microbial agents capable of causing disease are studied in the course in microbiology, and the effect of these and other harmful substances upon the body are studied in the course in pathology. The modes of action of various therapeutic agents are considered in the course in pharmacology. Introductory lectures and demonstrations in the clinical sciences are given during the second semester in order to prepare the student for the responsibilities of the following year.

In the third year the student is assigned to the University Hospital and affiliated hospitals for lectures, conferences, and clinical studies. He serves in the various divisions of the hospital assisting in the preparation of clinical records and perform-

ing certain clinical laboratory examinations. He learns to apply diagnostic and therapeutic procedures in the care of patients. During this period instruction is individual or in small groups. The instructor reviews the student's observations at the bedside and guides him in the development and application of his knowledge.

In the fourth year the student's responsibility for inpatient care continues and increases. The University Hospital, the District of Columbia General Hospital, Children's Hospital, Mt. Alto Veterans Administration Hospital, St. Elizabeths Hospital, Fairfax Hospital, and Washington Hospital Center provide the students with experience in many fields. In this final year of formal medical education stress is placed upon the total patient and his environment so that emotional and economic as well as physical factors may be considered in the restoration of the individual to a state of health and happiness.

Upon satisfactory completion of the four-year course of the School of Medicine, the student is well prepared for graduate training leading to a career in general or specialty practice, research, medical education, or government service.

EQUIPMENT AND FACILITIES

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; biochemistry; microbiology; pathology; pharmacology; and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research and Administration Building.—The Research Building houses special laboratories for graduate and staff research in the departments of Anatomy; Biochemistry; Microbiology; Pharmacology; and Physiology. Special facilities are provided for the study of radioactive compounds, for tissue-culture techniques, and virologic procedures. Selected students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the west wing is occupied by a modern medical library; the east wing houses the administrative offices of the School of Medicine. Photographic laboratories and other facilities for audiovisual aids to education are on the second floor.

Medical Library.—The Medical Library in well-equipped quarters on the first floor of 1339 H Street NW., contains 26,000 carefully selected volumes, including the new medical works and the principal medical journals.

Interlibrary loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open Monday through Friday, 1:00 to 5:00 P.M. and 6:00 to 11:00 P.M. During the academic year the library is also open Saturday and Sunday from 1:00 to 5:00 P.M.

The George Washington University Hospital.—This 427-bed hospital is staffed and directed by the Faculty of The George Washington University School of Medicine. It provides excellent clinical opportunity for the instruction of medical students. Specialties in the fields of medicine and surgery have assigned space and equipment for the diagnosis and care of ambulatory and hospital patients.

GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of special military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

CLINICAL FACILITIES

Students at The George Washington University School of Medicine receive clinical training at the University Hospital, at the University Cancer Clinic, and at affiliated hospitals.

The George Washington University Hospital.—The Medical Director and Chiefs of Services are responsible for the supervision of patient care. The individual student has direct responsibility to patients under supervision. Clinical and clinical pathological conferences are held in which the history of patients, laboratory records, and the physical and pathological findings are presented and correlated.

The University Clinics.—The University Clinics have facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for instruction in the University Clinics.

The George Washington University Cancer Clinic.—The Helen L. and Mary E. Warwick Memorial Building, opened in 1954, houses the Cancer Detection Clinic and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are used for teaching medical students. The diagnosis and treatment of various forms of neoplasms are presented. The results of treatment are evaluated by follow-up studies.

District of Columbia General Hospital.—The District of Columbia General Hospital, one of the ten largest general hospitals in the country, is a teaching facility for students of the School of Medicine.

The hospital has a bed capacity of approximately 1,250. It is the principal facility for the care of the indigent sick of the community. In 1961 the outpatient department had over 151,445 clinical visits. Approximately 200 patients are registered daily in the admitting and emergency service, of whom from 15 to 20 per cent are admitted to the Hospital. This is the largest emergency service in the District, and a great variety of acute medical and surgical problems are examined and treated.

Children's Hospital.—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics on both clinic and inpatient services. Special lectures and clinical work in child psychiatry are given in Children's Hospital.

St. Elizabeths Hospital.—Saint Elizabeths Hospital, established by an act of Congress in 1855, is a federal psychiatric hospital administered under the Department of Health, Education, and Welfare. This Hospital provides for the treatment, care, and general well-being of approximately 8,000 patients. The facility includes a com-

pletely approved General Hospital to meet the needs for medical and surgical care and which functions with a full-time staff within the Hospital plus attending physicians in various specialties.

The Hospital maintains an up-to-date medical library.

The medical students of The George Washington University utilize the facilities of Saint Elizabeths for clinical psychiatric training.

The opportunities for research are enhanced by a cooperative arrangement with the National Institute of Mental Health of the United States Public Health Service.

Mt. Alto Veterans Administration Hospital.—This 335-bed hospital, commonly referred to as Mount Alto, is predominantly general medical and surgical, although 33 beds are reserved for the care of neurological and psychiatric patients.

The Hospital is equipped and operates with all modern facilities for care and treatment of patients, including a fully equipped medical library. In addition to its medical, surgical, neurological, and psychiatric facilities, the Hospital is designated to perform specialized treatment in a wide variety of fields. The Hospital also has personnel assigned to, and cooperates closely with, the Armed Forces Institute of Pathology.

Fairfax Hospital.—This 300-bed suburban hospital, which opened February 1961, is a teaching hospital serving an area with an estimated population of 300,000. In addition to its modernly equipped emergency room, outpatient facilities, surgical suites and delivery rooms, and private psychiatric unit, programs are offered for the training of nursing personnel.

Washington Hospital Center.—A 787-bed general hospital which opened in March 1958, combining the facilities of Emergency, Episcopal, and Garfield hospitals. Located in northwest Washington, it serves the entire metropolitan area. A very active emergency service cares for more than 35,000 cases a year. All major clinical services are provided with the exception of pediatries. In addition to an extensive training program for house officers, the Center offers organized instruction for nurses, laboratory and X-ray technicians, and medical secretaries.

ADMISSION

APPLICATION FOR ADMISSION

1. Full directions for application will be furnished on request. The applicant should ask the registrar of each college previously attended to send an official transcript of record to the Office of Admissions, The George Washington University School of Medicine, 1339 H Street NW., Washington 5, D. C. Photostatic copies of credentials without the original signature of the certifying authority are not satisfactory. It is the responsibility of the applicant to see that all credentials are forwarded to the Office of Admissions of the School of Medicine.

2. Two recent photographs, with signatures, are required of each applicant.

3. Applicants for admission are required to take the Medical College Admission Test, sponsored by the Association of American Medical Colleges, in advance of the academic year for which application is made.

4. A fee of $10 to defray the cost of completing the records for consideration by the Committee on Admissions must accompany each application. This fee applies to students whose premedical training was completed at this University as well as to students who have not previously attended this University.

ENTRANCE REQUIREMENTS

A minimum of 90 semester hours applicable toward a degree in an approved College of Arts and Sciences including:

Biology (including 4 hours of laboratory) 8
A course in either general biology or zoology

Chemistry:

Inorganic (including 4 hours of laboratory) 8
Qualitative analysis may be counted as part of this requirement.

Organic (including laboratory) 6-8
The equivalent of a one-year college course

English Composition and Literature 6

Physics (including at least 2 hours of laboratory) 8

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimal 90 semester-hour requirement, the majority of applicants are found to be better prepared for the study of medicine after four years of college work.

ADVANCED STANDING

A student who has satisfactorily completed part of the requirements for the degree of Doctor of Medicine may apply for advanced standing if his work has been equivalent to that required by The George Washington University School of Medicine. Before final admission to the third year class, the applicant must have passed Part I of the National Board Examinations.

SELECTION PROCEDURES

The Committee on Admissions is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed on invitation by the Committee.

Each applicant is notified of the Committee's decision as soon as possible.

An applicant who is offered a place in a class is required, within two weeks, to notify the Office of Admissions of the School of Medicine of his intent to accept the place reserved for him. A deposit of $100 must be remitted not later than January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

Accompanying the offer of a place in class will be forms for a report on physical condition. This report must be completed and returned to the Office of Admissions of the School of Medicine by the student's physician within two months of receipt of the letter of acceptance.

REGISTRATION

For the academic year 1963-64, registration will be conducted at the Medical School, 1335 H Street NW., from 10:00 A.M. to 4:00 P.M., September 12. Registration is for a period of one academic year.

FEES AND FINANCIAL REGULATIONS

The following fees have been adopted:	
Application fee	$ 10.00
Tuition fee, for each academic year	1,350.00
Fee for special examinations, for each subject	5.00
Residence fee, charged each student granted "leave of absence" status for the academic year in the School of Medicine	50.00
Graduation fee	25.00

PAYMENT OF FEES

Fees for the year are $1,350, payable in two installments of $675 each in advance of the beginning of each semester.

All fees are payable at the Office of the Cashier of the University, 725 Twenty-first Street NW., except as some other arrangement may be announced. Amounts due must be paid on or before registration day for the fall semester and on or before such date as may be announced by the Office of the Treasurer for the spring semester. (See the Calendar.)

Registration in the School of Medicine is *for the full academic year.* After a student has entered the courses of instruction he is obligated for the full tuition. Acceptance by the School of Medicine of a student's fees does not in any way obligate the School to accept the student for any subsequent year and the right is reserved to require the withdrawal of any student whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $600; second year, $275; third year, $150; fourth year, $100; total $1125.

A fee of $1 a semester is charged for the use (optional) of a locker.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

The following fellowships, scholarships, prizes, and loan funds are limited to students in the School of Medicine. The University offers many others which are open to medical students. A special bulletin containing a complete list and full information may be obtained from the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

FELLOWSHIP

Samuel Jordan Graham Fellowship in Surgery (1961).—By bequest, in memory of Judge and Mrs. Graham. The income from this fund, up to $2,000, may be used to assist students who are pursuing postgraduate study or research, preferably in surgery, at the School of Medicine.

If no individual is conducting such work or deserving of the award, the income

may be used to provide one or more scholarships (to cover tuition and other school expenses deemed appropriate) for undergraduate students in the School of Medicine. Application should be made to the Chairman of the Department of Surgery no later than March 1.

SCHOLARSHIPS

Scholarships awarded to students in the School of Medicine are credited for the academic year unless otherwise specified. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded. Applicants must have established an academic record for one semester in the School of Medicine, and should apply on prescribed forms which must be filed in the Office of the Associate Dean of the School of Medicine, 1339 H Street NW., Washington, D. C., not later than April 1 preceding the academic year for which the scholarship is to be awarded.

Avalon Foundation Scholarship Fund (1960).—An unrestricted supplement to the scholarship funds of the Medical School, to be expended in conformity with the School's policy and available until expended for nonrefundable grants to students. Scholarship aid from this fund shall be granted "to students on a combined basis of financial need and scholarship attainment." Available 1962–63.

Anna Bartsch Hospital Intern Scholarship (1946).—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman intern in the University Hospital.

Anna Bartsch Medical Student Scholarship (1946).—A $500 scholarship established by Dr. Anna Bartsch-Dunne, as a memorial to her mother. Awarded to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession".

Everett Lamont Bradley Scholarship (1954).—A partial scholarship, by bequest of Alice R. H. Bradley in memory of her son, for a student in the School of Medicine.

Brooklyn Alumni Club Scholarship Fund (1959).—Established to financially assist a needy student in the School of Medicine.

Joseph Collins Foundation Scholarships.—Available to medical school students upon application through the Office of the Dean of the School of Medicine.

Robert Woods Johnson Scholarship Fund.—Available to medical school students upon application through the Office of the Dean of the School of Medicine.

Ki-Wives Scholarship.—A full tuition scholarship available to a student or students in the School of Medicine.

Medical Research Scholarships and Traineeships.—For student participation in the research programs of the School of Medicine or special training in research methods. Research scholarships are ordinarily awarded for full-time activity during the summer months; research traineeships support part-time work during the academic year. Scholars are "matched" with members of the faculty in accordance with their mutual interests. Trainees are designated by the departments responsible for the programs. These programs have been sponsored by the National Institutes of Health, the National Foundation, Lederle Laboratories, and Tobacco Industry Research Committee. In addition a number of research scholarships have been made available through the American Cancer Society Institutional grant and the Washington Heart Association.

Chas. Pfizer Medical Scholarship Program (1962).—Established to financially assist a student in the School of Medicine.

David Perry Steinman Memorial Scholarship Fund (1960).—Established by friends and classmates. Awarded annually to a sophomore in the School of Medicine on the basis of need and academic performance.

Tuition Scholarship.—A full tuition scholarship presented by a friend of the School of Medicine, to be awarded to a worthy student for one year.

University Hospital Scholarships in Medical Technology.—Ten scholarships are available, each to cover the cost of 24 semester hours of the 30 in the last year of the curriculum leading to the degree of Bachelor of Science in Medical Technology. Inquiries should be directed to the Department of Pathology, The George Washington University Hospital.

PRIZES

Allie S. Freed Prize (1957).—Awarded annually to a member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of preventive medicine.

Alec Horwitz Prize (1959).—A prize of $100 awarded annually to a senior who has demonstrated exceptional proficiency in the field of surgery.

Huron W. Lawson Prize (1957).—A prize of $100 established by Mrs. Lawson in memory of her husband, who was a distinguished member of the Medical Staff of the University, is presented annually to a member of the graduating class who has demonstrated exceptional proficiency in the field of obstetrics and gynecology.

Julius S. Neviaser Prize in Orthopedic Surgery (1956).—A prize of $100 awarded annually to the student in the junior class who scores the highest grade in a written examination in orthopedics.

John Ordronaux Prize.—By bequest, $150 awarded annually to the member of the graduating class of the School of Medicine who has the highest scholastic standing.

FINANCIAL AID

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of the University have made available a fund for short-term loans to students to provide for partial payment of tuition. Application should be made three days prior to the dates on which tuition installments are due.

American Medical Association Medical Education Loan Guarantee Program.—Available to medical school students (beyond the first year of medicine) upon application to the Office of the Dean of the School of Medicine.

Edith K. Carr Medical School Loan Fund (1961).—A fund of $5,000 established by Mrs. Carr for loans to students in the School of Medicine.

Joseph H. Himes Loan Fund.—A fund of $18,000 is available for loans to students in the School of Medicine.

Kellogg Medical School Loan Fund.—A fund of $21,500, established by the W. K. Kellogg Foundation of Battle Creek, Michigan, for loans to students in the School of Medicine.

School of Medicine Loan Fund.—A fund of $22,000, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—A fund of $1,080, established by Chas. Pfizer & Co., Inc., for loans to students in the School of Medicine.

Sutherland Medical School Loan Fund.—A fund of $1,650, established by Mrs. Rose L. Sutherland, for loans to students in the School of Medicine.

REGULATIONS

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required.

GRADES

A—excellent; *B*—good; *C*—passing; *D*—condition; *F*—failure; *I*—incomplete. The passing grade in each subject is *C* or above.

The symbol *I* indicates that the required work of the course has not been completed for reasons acceptable to the Dean. An "incomplete" must be removed by arrangement with the department concerned before the student may advance to the work of the following year.

A student receiving a grade of *D* or *F* in any subject may not advance to the work of the following year until he has complied with such recommendations by the Committee on Scholarship as are approved by the Faculty.

QUALITY-POINT INDEX

For purposes of quantitative evaluation of academic performance a "quality-point" index is computed on the basis of *A*, four points; *B*, three points; *C*, two points. If a condition, *D*, is removed one point is assigned. Zero points are assigned for a condition which is not removed or for a grade of *F*.

EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held during and at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations.

GRADUATION

Application for Graduation

Application for a degree should be filed in the Office of the Registrar by February 28 of the senior year.

Presence at Graduation

A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

COMBINED ARTS AND MEDICINE CURRICULUM

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least 90 semester hours of prescribed college work (at least 30 hours and one year of residence must be completed in Columbian College of Arts and Sciences) and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, and free of all indebtedness to the University. He must have completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

HONORS

A candidate who has completed the four-year medical course with a quality-point index of 3.50 or above, may be recommended by the Faculty for graduation "with distinction."

STUDENT LIFE

HEALTH ADMINISTRATION

The Health Administration Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Administration, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;* (2) three visits in any one illness by a member of the Health Administration Staff, office or residence (District of Columbia): (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration.† All additional hospital charges

* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

† See Rule (5) for exception.

for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has served his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

PHYSICAL EXAMINATIONS

All first-year students are required to have a comprehensive physical examination prior to admission to the School of Medicine. The students are informed of significant findings and advised regarding such measures as will tend to help them maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School maintains. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylaxis exists.

LIVING ACCOMMODATIONS

The University maintains seven attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Director of Activities for Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under no circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May

first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $50, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 30, $25 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1962–63 are as follows:

	Academic Year	
	Double	*Triple*
Residence Halls for Men		
John Quincy Adams Hall	.....	$345
John C. Calhoun Hall	$380	.....
James C. Welling Hall (Limited space available)	300	.....
	Single	*Double*
Residence Halls for Women		
William H. Crawford Hall	.....	$405
Hancock Hall	$535	405
Dolly Madison Hall	.....	405
Hattie M. Strong Hall	470	405

Forms for applications, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW. or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

HONOR SOCIETIES

Alpha Omega Alpha.—National Honor Medical Society. Members of the Junior and Senior classes meeting the qualifications specified by the constitution of the Society are eligible for election to membership.

William Beaumont Medical Society.—Medical students showing unusual ability for medical writing and research are elected by the active members of this society.

Howard Kane-A. F. A. King Obstetrical Society.—The fifteen students in the third and fourth year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

Smith-Reed-Russell Society.—Students of the third and fourth years who maintain a quality-point index of 3.30 or higher are eligible for membership.

RECREATION

The nation's capital provides abundant recreational resources, a large number of which are available at little or no cost. There are numerous art galleries, museums, concert halls, theaters, swimming pools, parks, and places of great historic interest. There are, in addition, the usual commercial recreation facilities found in a large city. Social activities are provided by student organizations of the University, the School of Medicine, and University sponsored programs such as intramural sports, concerts, recitals, and dramatic productions. Almost every religious faith is represented in Washington by one or more churches, and much spiritual, educational, social, and recreational activity is conducted by the various church groups. There are many other cultural and educational facilities in Washington to meet almost any possible individual need or preference of a medical student and his family.

THE UNIVERSITY HOSPITAL

The Medical Staff consists of the following groups: Emeritus, Honorary, University, and Courtesy.

Physicians on the faculty and staff of instruction of the School of Medicine are eligible for appointments to the University Hospital staff. The Administrator of the Hospital and the Director of Nursing are ex-officio members.

OFFICE OF THE MEDICAL DIRECTOR

John Parks, M.D., *Medical Director*
Alvin Edward Parrish, M.D., *Co-ordinator of Clinical Activities*
Alfred Brigulio, M.D., *Secretary of the Medical Staff*
Clayton Bernard Ethridge, M.D., *Director of Post Graduate Medical Education*
Laura Beasley Brown, *Secretary, Office of the Medical Director*

DEPARTMENTS AND SECTIONS

Department of Anesthesiology: Charles Seymour Coakley, M.D., *Chief*
Department of Medicine: Thomas McPherson Brown, A.B., M.D., *Chief*
Heart Station: John McCallum Evans, A.B., M.D., *Director*
Section of Allergy: Halla Brown, M.D., *Chairman*
Section of Cardiology: John McCallum Evans, A.B., M.D., *Chairman*
Section of Dermatology: Harry Ford Anderson, M.D., *Chairman*
Section of Gastroenterology: Thomas Stone Sappington, A.B., M.D., *Chairman*
Section of Infectious Diseases: Monroe James Romansky, A.B., M.D., *Chairman*
Section of Internal Medicine: Clarence Richard Hartman, A.B., M.D., *Chairman*
Section of Metabolic Diseases: Louis Katz Alpert, M.D., *Chairman*
Section of Pulmonary Diseases: James Joseph Feffer, A.B., M.D., *Chairman*
Department of Neurology and Neurological Surgery: James Winston Watts, M.D., *Chief*
Electroencephalographic Laboratory: Harold Stevens, Ph.D., M.D., *Director*
Department of Obstetrics and Gynecology: Robert Henry Barter, B.S., M.D., *Chief*
Department of Ophthalmology: Ronald Atmore Cox, A.B., M.D., *Chief*
Department of Pathology and Clinical Pathology: Thomas Martin Peery, A.B., M.D., *Chief*
Cytology Laboratory: Lois Irene Platt, A.B., M.D., *Director*
Department of Pediatrics: William Allen Howard, A.B., M.D., *Chief*
Department of Physical Medicine and Rehabilitation: Charles Samuel Wise, B.S., M.D., *Chief*
Department of Preventive Medicine and Community Health: Joseph Francis Sadusk, Jr., A.B., M.D., *Chief*
Department of Psychiatry: Leon Yochelson, A.B., M.D., *Chief*
Department of Radiology: William Woodrow Stanbro, M.D., *Chief*
Department of Surgery: Brian Blades, A.B., M.D., *Chief*
Section of General Surgery: Brian Blades, A.B., M.D., *Chairman*
Section of Oral Surgery: Karl Hayden Wood, Phar.G., D.D.S., *Chairman*
Section of Orthopedics: John Pletch Adams, B.S., M.D., *Chairman*
Section of Otorhinolaryngology: James Jerry McFarland, Jr., B.S., M.D., *Chairman*
Section of Plastic Surgery: Gordon Sparks Letterman, B.S., M.D., *Chairman*
Section of Urology: Leon Richard Culbertson, B.S., M.D., *Chairman*

University Clinics: Joseph Francis Sadusk, Jr., A.B., M.D., *Director*
Cancer Clinic: Calvin Trexler Klopp, A.B., M.D., *Director*
Nursing: Margaret Ruth Emanuel, R.N., A.M., *Director*

COMMITTEES OF THE MEDICAL STAFF

EXECUTIVE COMMITTEE

John Parks, *Chairman*

R. H. Barter, Brian Blades, Alfred Brigulio, T. M. Brown, C. S. Coakley, R. A. Cox, Margaret Emanuel, C. B. Ethridge, W. A. Howard, V. F. Ludewig, A. E. Parrish, T. M. Peery, J. F. Sadusk, Jr., William Stanbro, J. W. Watts, C. S. Wise, L. T. Yochelson

JOINT CONFERENCE COMMITTEE

T. M. Brown, W. A. Howard, V. F. Ludewig, John Parks, T. M. Peery

MEDICAL RECORDS COMMITTEE

P. C. Adkins, *Chairman*

Madeline Brown, S. W. Bush, F. P. Ferraraccio, J. W. Sites, *Chief Residents*

INTERN AND RESIDENT COMMITTEE

V. F. Ludewig, *Chairman*

P. C. Adkins, R. H. Barter, J. M. Evans, T. M. Peery

TISSUE COMMITTEE

W. S. McCune, *Chairman*

R. H. Barter, William Newman

CANCER COMMITTEE

C. T. Klopp, *Chairman*

L. K. Alpert, W. P. McKelway, William Newman, F. P. Ferraraccio, H. C. Pierpont

PHARMACY COMMITTEE

W. R. Felts, *Chairman*

L. K. Alpert, F. D. Cooper, J. A. Dusbabek, J. M. Evans, C. R. Hartman, Louise O'Neal, J. R. Thistlethwaite

NURSING SERVICE COMMITTEE

Margaret Emanuel, *Chairman*

R. H. Barter, Brian Blades, T. M. Brown, V. F. Ludewig, A. E. Parrish, J. E. Rankin

UNIVERSITY HOSPITAL ADMINISTRATIVE STAFF

Office of the Administrator

Victor Frederick Ludewig, B.S., *Administrator*
Fred Augustus Menk, *Associate Administrator*
Francisco Paolo Ferraraccio, B.S., *Assistant Administrator*
Raymond Francis Whitehair, *Administrative Assistant*

John Charles Donaher, Jr., M.S., *Research Analyst*
Laura Beasley Brown, *Secretary, Office of the Medical Director*
Jeanne Simon Swope, *Secretary, Office of the Administrator*
Sadie Estelle Oakley, *Chief, Admission Office*
Roger William Baker, B.S., *Assistant Comptroller*
Robert Hamilton Thompson, B.S., *Director of Food Service*
Joanne Louise Styer, B.S., *Chief Therapeutic Dietitian*
Charles Clark Hayes, *Executive Housekeeper*
Frank Leonard Sasher, *Manager, Laundry Department*
Madeline Lenora Brown, R.R.L., A.B., *Medical Record Librarian*
Margaret Ruth Emanuel, R.N., A.M., *Director of Nursing*
Louise O'Neal, R.N., A.B., *Assistant Director of Nursing*
Frederick Joseph Kessler, B.S., M.B.A., *Administrative Assistant, Outpatient Department*
Franklin Dero Cooper, M.S., *Chief Pharmacist*
Thelma Moore, *Chief Telephone Operator*

THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The George Washington University Hospital, with a capacity of 427 beds, is a modern teaching facility for students of the School of Medicine and House Staff. Annual admissions number approximately 20,000; clinic visits are about 40,000 a year. The University Hospital is on Pennsylvania Avenue at Washington Circle. It is fully approved by the American Medical Association, the American Hospital Association, the American College of Surgeons, and the Joint Commission for the Accreditation of Hospitals.

The Council on Medical Education and Hospitals of the American Medical Association and the various specialty boards have approved the University Hospital for residency training in anesthesiology, cardiac disease, internal medicine, neurology, neurological surgery, obstetrics-gynecology, pathology, physical medicine and rehabilitation, plastic surgery, psychiatry, radiology, surgery, and thoracic surgery. In addition, it has mixed internships majoring in medicine, pathology, and surgery.

Junior and senior students of the School of Medicine are assigned to the University Hospital as clinical clerks and in the University Clinics. Regular conferences for students, house staff, and attending physicians are held.

The George Washington University Cancer Clinic, housed in the nearby Helen L. and Mary E. Warwick Memorial Building is part of the University Hospital clinical facilities. Cancer detection and chemotherapeutic and follow-up care, including a supervised home-care program, are among the activities of the Clinic. Approximately 2,500 new patients are seen in the Cancer Clinic each year. Excellent research laboratories form an important part of this facility. The Clinic has been approved by the American College of Surgeons.

Other major teaching activities include a residency program in hospital administration; close affiliation with the University's graduate program in hospital administration; programs in Medical Technology leading to the Bachelor of Science degree as well as to a certificate; and an affiliation for the training of practical nurses.

The Hospital has an excellent branch medical library. The House Staff can also arrange to use libraries of the School of Medicine and the University and the outstanding city and federal libraries and record collections.

INTERN PROGRAMS

Straight internships are available in Medicine, Pathology, and Surgery.

RESIDENT PROGRAMS

Fifty-five approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, neurology, obstetrics-gynecology, orthopedic surgery, pathology, physical medicine, plastic surgery, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are from one to four years in duration, depending upon the service. Residents in the University Hospital also receive appointments as members of the faculty of the School of Medicine with active teaching responsibilities.

FELLOWSHIP PROGRAMS

Fellowships, through the School of Medicine, of one or two years are available in anesthesiology, cardiology, chest diseases, gastroenterology, hematology, infectious diseases, metabolic diseases, outpatient service, physical medicine, renal diseases, rheumatic disease, surgery and thoracic surgery.

All appointments are for one year with the privilege of applying for continuation on the House Staff. In several of the intern, residency, and fellowship programs, excellent affiliations are maintained with local and governmental hospitals. Inquiries and applications for internships and residencies should be addressed to the Chief of the Department or to the Medical Director; the George Washington University Hospital, 901 23rd Street, NW., Washington 7, D. C.

Information relative to fellowships may be obtained from the Chief of the Department concerned or from the Director of Postgraduate Medical Education, in care of the Hospital.

MEDICAL TECHNOLOGY COURSE

This course is open to candidates for the degree of Bachelor of Science in Medical Technology, offered by Columbian College of Arts and Sciences, and to other applicants meeting the requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. These requirements, fully satisfied by the Columbian College program, consist of 3 years (90 semester hours or 135 quarter hours) of college work in any college or university accredited by a recognized standardizing association, including certain specific courses in the science field. The specific science requirements are as follows: *Chemistry*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in chemistry and including lecture and laboratory; *Biologic Sciences*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in biologic science and including lecture and laboratory; *Mathematics*—a minimum of 3 semester hours or 4 quarter hours of college mathematics.

For students enrolled in Columbian College of Arts and Sciences as candidates for the degree of Bachelor of Science in Medical Technology, the Medical Technology Course constitutes the final (fourth) year of qualification for the degree.

In the case of those who have taken their prerequisite work in some other college or university, satisfactory completion of the Medical Technology Course will not satisfy the requirements for the degree from Columbian College.

The Medical Technology Course consists of 12 months of didactic and practical work in clinical laboratory procedures, offered by the Department of Pathology in

the University Hospital. Students ordinarily begin this course with the fall semester, but under exceptional circumstances may begin at other times.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. (See page 30.) All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of $65 a month is granted during the last 6 months of the fourth year in training.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the national certifying examination given by the Registry of Medical Technologists.

Enrollment in the Medical Technology Course is strictly limited so that personal instruction can be given. Acceptance to the Columbian College degree program does not necessarily assure acceptance into the Hospital program. Inquiry about this course should be sent directly to the Department of Pathology, The George Washington University Hospital, Washington 7, D. C.

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Alumni Fund.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington 6, D. C.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION

The George Washington University Medical Alumni Association incorporated in 1959, continues the organization previously known as The George Washington University Medical Society. It has been affiliated with the General Alumni Association since 1926.

The stated purposes of the Association are as follows: "This shall be a nonprofit organization international in scope, whose objectives shall be to provide constructive services for the alumni of The George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of The George Washington University School of Medicine, its students, The George Washington University Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold Doctor's degrees; Doctors of Medicine who have had one or more years of postgraduate training in The George Washington University Hospital.

Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine Building at 1335 H Street NW., Washington, D. C.

Officers of the Association for the Year 1962–63

President.—Howard E. Ticktin, A.B. 1950, M.D. 1954
President Elect.—William P. McKelway, M.D. 1950
First Vice President.—George Speck, M.D. 1941
Second Vice President.—Virginia A. Duggins, A.M. 1951, M.D. 1955
Secretary.—Frank N. Miller, Jr., B.S. 1943, M.D. 1948
Treasurer.—Jerome H. Epstein, A.M. 1948, M.D. 1953
Members of the Council:
Frederick Y. Donn, Jr., M.D. 1941
Brooks G. Brown, M.D. 1939
Edward E. Ferguson, M.D. 1936
Charles S. White, Jr., M.D. 1942
Alfred E. Brigulio, M.D. 1936
Richard E. Palmer, A.B., M.D. 1944

COURSES OF INSTRUCTION

On the following pages of this BULLETIN, are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to nonmedical students certain undergraduate and graduate courses in the following fields: Anatomy, Microbiology, Biochemistry, Pathology, Pharmacology, Physical Medicine, and Physiology. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS AND SYMBOLS

A number in parentheses after the name of a course indicates number of semester hours of credit which may be earned by nonmedical students.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500.

Courses offered in the School of Medicine for nonmedical students.—Courses numbered from 101–200 are planned for upper-division students in undergraduate curricula. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction. Courses numbered from 201 to 300 are planned for graduate students.

ANATOMY*

Professors I. R. Telford *(Chairman)*, Paul Calabrisi
Professorial Lecturer T. D. Stewart
Associate Professors F. D. Allan, T. N. Johnson
Assistant Professors J. B. Christensen, J. C. Bartone
Clinical Instructors R. N. Brown, L. E. Church, L. C. Dearden, B. S. Blumberg
Fellows R. G. Clark, N. A. Walensky

161–2 *Gross Anatomy*

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. (Academic year: fall—12 hours a week; spring—3 hours a week.) Calabrisi and Staff

163 *Human Embryology*

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology. (Spring—3 hours a week.) Allan and Staff

164 *Neuroanatomy*

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. (Fall—5½ hours a week.) Johnson and Staff

* Staff of Instruction for the academic year 1962–63.

105 *Microscopic Anatomy* — Telford and Staff
Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations. (Fall—9 hours a week.

201–2 *Gross Anatomy* (8–2) — Calabrisi and Staff
For qualified nonmedical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $30; Anatomy 202—laboratory fee, $7. (Academic year—as arranged)

203 *Human Embryology* (2) — Allan and Staff
For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8. (Spring—as arranged.)

204 *Neuroanatomy* (3) — Johnson and Staff
For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13. (Fall—as arranged.)

205 *Microscopic Anatomy* (4) — Telford and Staff
For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13. (Fall—as arranged.)

221–22 *Seminar* (1–1) — Telford and Staff
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)

249–50 *Introduction to Medical Research** (3–3) — The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopes—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

295–96 *Research* (arr.) — The Staff
Fee to be arranged. (Academic year—as arranged.)

299–300 *Thesis* (3–3)

ANESTHESIOLOGY†

Professors C. S. Coakley *(Chairman)*, Seymour Alpert
Clinical Professor D. H. Stubbs
Associate Professor C. R. MacCordy
Assistant Professors Paula Kaiser, H. E. Curtis, Helene Werner, K. H. Hanson
Assistant Clinical Professors S. N. Albert, Maria Benzinger
Instructors Patricia Russell, Virginia Porter, Marie-Louise Levy
Clinical Instructors W. E. Bageant, Allen Widome, Charles Gruenwald
Fellows Irma Gedang, W. T. Wong
Assistants Arsacio Abella, A. R. Bergman, Sumana Chaiyasuta, J. R. Glazer, C. Y. Hsu, Tetsuji Kiba, R. I. Labalan, A. deJ. Taboada

320 *Anesthesiology* — The Staff
The fundamentals of anesthesia are reviewed and correlated with other medical specialties. (Spring—1 hour a week.)

421–22 *Anesthesia Seminar* — The Staff
Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital. (Academic year—1 hour a week.)

* This is an interdepartmental course. The student should register in the department directing his research.
† Staff of Instruction for the academic year 1962–63.

433–34 *Advanced Anesthesiology* — The Staff

Students are rotated through the work of the department for a period of two weeks and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered. (Academic year—as arranged.)

BIOCHEMISTRY*

Professors J. H. Roe *(Emeritus)*, C. R. Treadwell *(Chairman)*
Professorial Lecturers W. R. Carroll, Irving Gray, Arthur Weissbach, Leon Swell, Sidney Udenfriend
Associate Professors B. W. Smith, G. V. Vahouny, J. M. Bailey
Associate H. W. Clark, Jr.
Fellows Concordia Borja, R. R. Gray, R. M. Mayer, S. I. Sherr

113–14 *Medical Biochemistry* — The Staff

Lecture (2 hours), conference (1 hour), laboratory (6 hours). Physiological and clinical chemistry. For medical students. (Academic year—as arranged.)

221–22 *General Biochemistry* (4–4) — Vahouny

A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, $15 a semester. (Academic year—TTh 8–12 am.)

224 *Biochemistry of the Enzymes* (1) — Weissbach

Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. (Spring—M 5 pm.)

225–26 *Biochemical Procedures* (3–3) — Smith and Staff

A laboratory course. Material fee, $16 a semester. (Academic year—as arranged.)

227–28 *Biochemistry Seminar* (1–1) — The Staff

The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (*First half:* F 5 pm. *Second half:* F 4 pm.)

232 *Proteins and Amino Acids* (1) — Carroll

A lecture course. Prerequisite: Biochemistry 113 or 221. (Spring—W 5 pm.)

241 *Isotopes* (2) — Gray

Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromotography. (Spring—S 8 am.)

249–50 *Introduction to Medical Research*† (3–3) — Bailey

Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

251 *Carbohydrate Metabolism* (1) — Roe

A lecture course. Prerequisite: Biochemistry 114 or 222. (1964–65 and alternate years: fall—S 9 am.)

261 *Biochemistry of the Lipids* (1) — Swell, Treadwell

A lecture course. Prerequisite: Biochemistry 114 or 222. (Spring—S 12 am.)

295–96 *Research in Biochemistry* (arr.) — The Staff

(Academic year—as arranged.)

299–300 *Thesis* (3–3) — The Staff

* Staff of Instruction for the academic year 1962–63
† This is an interdepartmental course. The student should register in the department directing his research.

DERMATOLOGY AND SYPHILOLOGY*

Professor H. F. Anderson *(Chairman)*
Assistant Clinical Professors Hayden Kirby-Smith, J. Q. Gant, Jr., W. G. Ballinger, C. S. Brown
Associates Reuben Goodman, D. J. Demis
Clinical Instructors Manuel Landman, Henry Bryan, P. L. Repetto

214 *Dermatology and Syphilology* — The Staff
Lectures on diseases of the skin and syphilis. (Spring—2 hours a week for eight weeks.)

317–18 *Clinic* — Brown
Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* — The Staff
Dermatology and syphilology in infants and children. Children's hospital. (Two hours a week as arranged in rotation during academic year.)

409–10 *Clinic* — The Staff
Clinical demonstrations, diseases of the skin. University Hospital. (Two hours a week as arranged in rotation during academic year.)

MEDICINE*

Professors T. M. Brown *(Chairman)*, M. J. Romansky, L. K. Alpert, J. M. Evans, C. B. Ethridge
Associate Professors A. E. Parrish, C. R. Hartman, S. W. Bush, W. R. Felts, Jr., C. A. Kelser, Jr.
Associate Clinical Professors Pearl Holly, J. J. Feffer, A. G. Prandoni, Halla Brown, O. R. Farley, D. C. Sun, Janet Travell, T. S. Sappington, J. W. Trenis, Alfred Brigulio, Joseph Ney, Joseph Beinstein, J. J. Rheingold, Irene Tamagna, J. W. Latimer, Jr., Arthur Rosenbaum, E. A. Gombos
Assistant Professors M. H. Jacobson, H. H. Orvis, Irene Siu, R. C. Fowler, Ariel Hollinshead *(Research)*, Mary Watt, N. C. Kramer, Juan Calatayud
Assistant Clinical Professors T. J. Abernethy, Benjamin Manchester, L. E. Putnam, Elizabeth Hill, J. E. Rall, L. J. Thomas, M. H. Stolar, S. J. N. Sugar, F. S. Bacon, H. D. Ecker, C. W. Jones, C. W. Thompson, E. S. Gladsden, Maurice Mensh, F. J. Murray, E. P. Parker III, M. H. Rosenberg, J. W. DuChez, W. O. Bailey, Jr., Milton Gusack, Jack Kleh, T. A. Gonder, Rashid Massumi, Ruth Benedict, H. M. Silver, H. E. Ticktin, J. P. Nasou, David Horwitz, B. C. Jones, Jr., E. L. Kehoe, R. F. Manegold, W. H. Whitmore, Jr., L. S. Blumenthal, J. P. Mann, Edward Adelson, R. R. Belton
Associates Maurice Protas, R. B. Castell, S. T. Gibson, R. B. Miller, Ernest Cotlove, T. J. Kennedy, Jr., Jack Orloff, J. B. Marbury, Louis Ross, F. D. Chapman, L. H. Snyder, R. G. Taylor, J. W. Long, Irvin Kerlan, Virginia Beelar, S. W. Kirstein, J. F. Ambury, R. N. Coale, Israel Kessler, W. D. Brill, Marvin Fuchs, W. J. Wea-

* Staff of Instruction for the academic year 1962–63.

ver, Jr., J. T. Burns, T. L. Hartman, Boris Rabkin, M. H. Rose, C. A. Schulman, L. A. Craig, Jr., A. W. Danish, Adolph Friedman, Alvin Seltzer, S. D. Loube, Alfred Baer, Herbert Abramson, J. H. Pert, John Walsh, C. E. Law, E. L. Rea, Conrad Gossels, H. O. Mott, Bertle Nelson, W. J. Schewe, J. H. Watson, N. H. Rubenstein, D. M. Watkin, G. J. Fisher, W. L. Stone, B. H. Ostrow, C. D. Cooper, S. C. Pascoe, W. R. Ehrmantraut, C. A. Caceres, G. A. Chapman, F. M. Gross, Eleanor Makel, S. A. Babin, Jr., Alice Brigham, Jack Crowell, D. S. Davis, J. H. Epstein, F. K. Harris II, R. F. Dyer, D. M. Tormey

Instructor Paul Schlein

Clinical Instructors E. H. Bauersfeld, H. C. Bates, Jr., Jeanne Bateman, George Sharpe, William Lewis, M. A. Sislen, C. J. Savarese, Jr., B. R. Cooperman, M. G. Sherer, J. C. Mandes, R. L. Howard, Walter Kurland, E. J. Leonard, R. S. Gordon, Jr., J. W. Roark, G. C. Buchanan, Audrey Connor, H. I. Passes, C. W. Foulke, Margret McCabe, A. A. Lear, O. W. Donnelly, R. S. Poole, H. C. Sadin, S. J. Talpers, G. T. Economos, Irwin Ardam, S. W. Dejter, S. E. Barr, H. A. Moskovitz, J. T. Hagenbucher, G. N. Polis, J. L. Clifford, Daniel Deykin, Catherine Ray, H. G. Rose, Sammye Belcher, Morton Gluck, A. W. McLaurin, R. A. Olsson, Robert Steinmuller, W. F. Morrissey, R. A. Apter, Francis Chucker, H. D. Cohn, F. A. Peck, M. A. Mufson, Gilbert Hurwitz, R. E. Rieselbach, R. S. Wilkinson, W. E. Gallinek, J. C. Kirby, Jr., Leslie Wiener

Fellows D. J. Coleman, Olga Eaton, P. A. Gorman, M. J. Halbertstam, J. C. Rios, Henry Schindelar

Assistants Manuel Angoso-Dufoureq, J. E. Benzel, N. K. Bohrer, D. B. Cameron, S. J. Conway, L. H. Fenton, M. J. Garcia, D. D. Haut, Rhona Keller, John Kilfeather, J. R. Moore, Jr., J. P. Mudry, Andree Thomas

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Special Lecturers A. D. Kistin, Sol Katz, R. W. Berliner, T. H. McGavack, P. D. Comanduras, W. L. Nalls, Roy Hertz, Albert Sjoerdsma, W. H. Crosby, D. S. Frederickson, Pierre Tulou, J. L. Goddard

236 *Clinical Microscopy* — The Staff

Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, excreta. (Spring—3 hours a week.)

242 *Physical Diagnosis* — The Staff

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients. (Spring—6 hours a week.)

244 *Introduction to Medicine* — The Staff

Lectures and conferences covering the principles of internal medicine. (Spring—1 hour a week.)

326 *Introduction to Medical Management* — The Staff

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. D. C. General Hospital.

327 *Clinical Pathological Conferences I* — The Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared. (Fall—1 hour a week.)

349 *Medical Conferences* — The Staff

D. C. General Hospital. (Fall—6 hours a week.)

421–22 *Clinics* — The Staff
Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. University Hospital. (Six weeks as arranged during academic year.)

423–24 *Inpatient Clerkship in Medicine* — The Staff
University, Mt. Alto, and D. C. General hospitals. (Six weeks as arranged during academic year.)

427–28 *Clinical Pathological Conferences II* — The Staff
Continuation of Medicine 327. (Academic year—1 hour a week.)

429–30 *Clinical Pathological Conferences III* — The Staff
Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. (Academic year—1 hour a week.)

*MICROBIOLOGY**

Professors A. M. Griffin, Mary Robbins, R. C. Parlett *(Chairman)*
Associate Professor Rudolph Hugh
Assistant Professors R. C. Wood, Elizabeth O'Hern, Lewis Affronti
Associates W. D. Hann, G. F. Pelleu, Jr.
Fellows Mary Flesner, Julian Hoptman, Meir Kende

Special Lecturers L. S. Baron, F. B. Gordon, Leon Jacobs, M. C. Leikind

112 *General Microbiology* (4) — Parlett and Staff
For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $16. (Spring—MWF 9:10–12 am.)

209 *Medical Microbiology*† — Parlett and Staff
For medical students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and disease of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. (Fall: lecture (4 hours), laboratory (10 hours)—as arranged.)

211 *Medical Bacteriology and Virology*† (7) — Parlett, Robbins
A study of the fundamentals of bacteriology and virology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

213 *Parasitology*† (3) — O'Hern
A study of the fundamentals of parasitology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $5. (Fall—as arranged.)

* Staff of Instruction for the academic year 1962–63.
† The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

215 *Immunology** (1)
Parlett
A study of the fundamentals of immunology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

219–20 *Advanced Microbiology* (arr.)
Hugh and Staff
Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Microbiology 112 or 211, 213, and 215; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $16 a semester. (Academic year—as arranged.)

222 *Advanced Mycology* (3)
O'Hern
Advanced study of methods and problems in mycology. Prerequisite: Microbiology 112 or 211, 213, and 215; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $16. (1964–65 and alternate years: spring—as arranged.)

225 *Microbial Chemistry and Physiology* (3)
Wood
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221–22 or the equivalent. A course in general microbiology is recommended. (1963–64 and alternate years: fall—as arranged.)

227 *Microbial Pharmacology* (2)
Wood
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1964–65 and alternate years: spring—as arranged.)

230 *Statistics and Microbiology* (3)
Griffin
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)

232 *Immunological Methods* (3)
Parlett, Affronti
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1964–65 and alternate years: spring—as arranged.)

234 *Virology* (6)
Robbins
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: spring—as arranged.)

249–50 *Introduction to Medical Research*† (3–3)
The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

293–94 *Staff Seminar* (1–1)
The Staff
For graduate students. Bi-weekly throughout the year. (Academic year—as arranged.)

295–96 *Research in Microbiology* (arr.)
The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3)
The Staff

* The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

† An interdepartmental course. The student should register in the department directing his research.

NEUROLOGY AND NEUROLOGICAL SURGERY*

Professors J. W. Watts *(Chairman)*, Harold Stevens, R. S. Paine
Associate Clinical Professors R. H. Groh, J. M. Williams, J. F. Fazekas
Assistant Clinical Professors J. P. Murphy, H. V. Rizzoli, A. S. Dekaban, Harvey Ammerman, G. J. Hayes
Associates G. D. Weickhardt, C. A. Marsan, A. J. Levens
Clinical Instructors M. C. Korengold, J. T. Lord, N. H. Horwitz, Z. W. Sanders, Ntinos Myrianthopoulos, R. H. Robertson, R. A. Mendelsohn, Ruth Jakoby, Virginia Duggins, L. C. McHenry, Jr., A. P. Hustead
Fellow R. J. Bortnick
Assistants J. W. Barrett, W. A. Rouady

Special Lecturer K. M. Earle

250 *Neurology: Basic* — Stevens and Staff
Methods of studying the form and function of the nervous system are presented in lectures and laboratory demonstrations. The transition between the basic sciences and clinical neurology is stressed and correlated. (Spring—1 hour a week.)

331 *Neurology and Neurological Surgery* — Watts, Stevens
Clinical lectures and demonstrations. (Fall—2 hours a week.)

335–36 *Neurosurgical Conferences* — Watts and Staff
Clinical conferences weekly. Six students in rotation. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* — Levens, Rizzoli
Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures. Six students in rotation. University Hospital. (Two hours a week for three weeks in rotation as arranged during academic year.)

433–34 *Clinical Neurology* — Groh, Sanders
Neurological inpatient examinations and demonstrations. Six students in rotation St. Elizabeths Hospital. (Two hours a week for three weeks in rotation as arranged during academic year.)

435–36 *Neurological Surgery (elective)* — The Staff
Lectures and motion picture demonstrations of neurosurgical problems. (Academic year—bi-monthly.)

OBSTETRICS AND GYNECOLOGY*

Professors John Parks, R. H. Barter *(Chairman)*
Associate Professor J. G. Sites
Associate Clinical Professors S. M. Dodek, J. A. Dusbabek, C. K. Fraser
Assistant Professor W. P. McKelway
Assistant Clinical Professors J. K. Cromer, Caroline Jackson, T. M. Leonard, W. T. Lady, T. A. Wilson
Associates B. W. Richwine, F. S. Rogers, R. M. Roll, J. W. Pearson, Jr., Shirley Martin, N. J. Price, M. S. Kaufman, M. P. Footer, J. C. Walsh, Donald Walters, J. M. Friedman, L. M. Liverett, Peter Soyster, H. P. Treichler

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* Staff of Instruction for the academic year 1962–63.

Clinical Instructors J. R. Epstein, S. H. Shea, A. S. Bright, W. H. Cooper, I. W. Rovner, M. W. Sandmeyer, Jr., N. M. Tart, Elizabeth Crisp, L. W. Davis, R. E. Bieren, A. W. Winshel, Benny Waxman, L. D. Amorosi

Assistants S. M. Belinsky, D. R. Carlson, S. D. Cooley, E. E. Cunningham, J. R. Day, Jr., R. V. Erkenbeck, E. R. Kolvereid, J. L. Marlow, J. R. Marshall, L. B. Outlar, Jr., Geraldine Paul, L. Q. Pugsley

254 *Introduction to Obstetrics and Gynecology* Dodek, Fraser
Lectures and demonstrations on the development and physiology of the female reproductive system and management of normal pregnancy. (Spring—1 hour a week.)

301–2 *Manikin Demonstrations* Waxman
The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class. D. C. General Hospital. (One hour a week for six weeks in rotation as arranged during academic year.)

337–38 *Obstetrics and Gynecology* Parks, Barter, Sites, McKelway
Lectures and demonstrations on the principles of obstetrics and gynecology. (Academic year—2 hours a week.)

351–52 *Clinical Clerkship* The Staff
Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. D. C. General Hospital. (Four weeks during academic year as arranged.)

441–42 *Clinical Obstetrics* The Staff
Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, attend bi-weekly departmental conferences and daily ward rounds in the University and D. C. General hospitals. (Academic year—as arranged.)

443–44 *Clinical Gynecology* The Staff
Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals. (Six weeks in rotation as arranged during academic year.)

OPHTHALMOLOGY*

Professor R. A. Cox *(Chairman)*
Clinical Professor E. A. W. Sheppard
Assistant Clinical Professor R. W. Wilkinson
Associates W. J. Romejko, W. P. Chalfant, Jr., W. J. G. Davis, R. E. duPrey, Robert Day, M. G. Alper
Clinical Instructors J. H. Lodge, W. B. Glew, J. R. Weimer, J. W. McTigue

352 *Ophthalmology* The Staff
Lecture course presenting aspects of all the principles of ophthalmology. (Spring—one hour a week for sixteen weeks as arranged.)

447–48 *Clinic* The Staff
Each student is given individual instruction in ophthalmological diagnosis. (Academic year—as arranged.)

* Staff of Instruction for the academic year 1962–63.

OTOLARYNGOLOGY*

Associate Clinical Professor J. J. McFarland, Jr. *(Chairman)*
Assistant Clinical Professors Catherine Birch, J. L. Levine, M. E. Krucoff, R. S. Page, Jr., J. A. Sabri, W. M. Trible

The Staff

351 *Otolaryngology*
Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. (Spring—1 hour a week for fourteen weeks.)

The Staff

354 *Bronchoscopy*
A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. (Spring—1 hour a week for two weeks.)

The Staff

355–56 *Clinic*
Practical and clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. University Hospital. (One and one-half hours a week in rotation as arranged during academic year.)

PATHOLOGY*

Professors T. M. Peery *(Chairman)*, W. R. Duryee *(Research)*
Clinical Professor D. L. Weiss
Associate Professors F. N. Miller, Jr., William Newman, W. L. Marsh, M. O. Skelton *(Visiting)*
Assistant Professors Lois Platt *(Cytology)*, Alexander Breslow, John Culberson
Assistants Gloria Brennan, Victor Fazekas, German Lasala, James Weaver

SPECIAL STAFF FOR DEMONSTRATIONS

Associate Clinical Professors J. S. Howe, E. F. Geever, R. G. Gottschalk
Assistant Clinical Professors R. E. Palmer, W. F. Enos, Cornelia Hoch-Ligeti, L. W. Fix, L. F. Misanik
Associates L. E. Zimmerman, C. B. Cook
Clinical Instructors D. R. Parkinson, I. D. Godwin

Special Lecturers E. B. Helwig, L. C. Johnson

Marsh and Staff

115–16 *Introduction to Medical Science* (1–1)
For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)

Marsh and Staff

117–18 *Principles in Medical Technology* (4–4)
For students in medical technology at the University Hospital. Theories, principles, and sources of error, of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)

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* Staff of Instruction for the academic year 1962–63.

119–20 *Medical Technology Laboratory* (10–10) Marsh and Staff

Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

259–60 *Pathology* Peery, Miller, Breslow, Culberson

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the functional effects of the various pathologic changes and their correlation with symptoms and physical signs. (Fall—9 hours a week; spring—3 hours a week.)

261–62 *Necropsy* The Staff

Students are required to attend and assist in the performance of necropsies at the University Hospital. (Academic year—as arranged.)

263–64 *Demonstrations in Pathology* Special Staff

Gross specimens from several hospitals are demonstrated and discussed. The University hospital laboratories for clinical pathology are visited and their functions are demonstrated. (Academic year—1 hour a week.)

267–68 *Seminars in Pathology* The Staff

Advanced lectures are presented as arranged on special topics in pathology. (Academic year—as arranged.)

270 *Forensic Pathology and Medical Jurisprudence* Miller

Forensic pathology, toxicology, chemistry, and immunology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine. (Spring—1 hour a week.)

281 *Problems in Experimental Cellular Pathology* (1) Duryee

For nonmedical graduate students. Also for a limited number of specially qualified medical students on an elective basis. Cytological and biophysical aspects of cellular function in relation to normal and selected pathological conditions. (Fall—1 hour a week as arranged.)

323–24 *Surgical Pathology I* Weiss

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing current surgical specimens. (Academic year—1 hour a week.)

327 *Clinical Pathological Conferences I* The Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are correlated. (Fall—1 hour a week.)

427–28 *Clinical Pathological Conferences II* The Staff

Continuation of Pathology 327. (Academic year—1 hour a week.)

429–30 *Clinical Pathological Conferences III* The Staff

Conferences are held at the University Hospital. Attendance is required of students during the medical clerkship there. (Academic year—1 hour a week.)

492 *Surgical Pathology II* Newman

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically. (Spring—1 hour a week.)

493–94 *Pathology Clerkship (elective)* The Staff

A limited number of students receive individual training in surgical pathology and necropsies in the laboratories of the University Hospital. (Academic year—as arranged.)

PEDIATRICS*

Clinical Professors Margaret Nicholson, W. S. Anderson, R. H. Parrott, L. E. Hoeck, W. A. Howard *(Chairman)*, J. A. Washington, R. S. Lourie

Associate Clinical Professor T. E. Reichelderfer

Assistant Professors S. L. Leikin, Wellington Hung, Artemis Simopoulos

Assistant Clinical Professors Margaret Gutelius, Mabel Grosvenor, Aaron Nimetz, George Maksim, A. B. Coleman, R. E. Martin, William Stark

Associates J. H. Peacock, Jr., Mary Sartwell, C. F. Stiegler, H. G. Clark, Adrian Recinos, Jr., C. R. Webb, A. R. MacPherson, G. J. Cohen, Bennett Olshaker, J. R. Puig

Clinical Instructors H. H. Diamond, R. H. Mitchell, R. O. Warthen, Emile Black, R. H. Anderson, W. G. Preisser, H. T. Yates, Roger Bergstrom, Mary Fox, S. Z. Goldblatt, Hilary Millar, Harold Plotsky, A. J. Modlin, Jean Lockhart, G. W. Dailey, Jr., Gloria Eng, Belinda Straight, Jean Yacoubian, T. H. Anders, Stephen Mourat, Morris Feitel

Assistants Julita Arrobio, Elizabeth Edmond, Forrest Hawkins, Victoria Khoury, E. W. Lovrien, Carl Pochedly

256 *Pediatrics* — Howard and Staff

Lectures on physiology of the newborn, normal behavior, emotional and physical development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Medical School. (Spring—2 hours a week.)

355 *Pediatrics* — Howard and Staff

Introduction to clinical pediatrics. Lectures, demonstrations, and case presentations designed to familiarize the student with history taking and physical diagnosis in various pathologic states, and stressing pathophysiology and management. (Fall—2 hours a week.)

365 *Pediatric Psychiatry* — Lourie and Staff

Lectures on neuroses of children and adolescents (in cooperation with the Department of Psychiatry). (Fall—as arranged.)

457–58 *Clinical Clerkship* — Howard and Staff

Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students. Children's Hospital. (Six weeks as arranged during academic year.)

459–60 *Outpatient Clinics* — Howard and Staff

Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital. (Academic year—as arranged.)

461–62 *Clinical Pathological Conferences* — Howard and Staff

Clinical and pathological discussion of recent patient history and laboratory data. Medical School. (Academic year—1 hour a week.) Gutelius and Staff

463–64 *Teaching Rounds*

Discussion of clinical problems of diagnosis and treatment of current patients. Children's Hospital. (Academic year—three times a week.) Howard and Staff

467–68 *Clinical Conferences I*

Required. Staff and student discussion of current problems in pediatrics with review of recent literature. Children's Hospital. (Academic year—3 hours a week.) Lourie and Staff

469–70 *Clinical Pediatric Psychiatry*

Clerkship in fourth year including Well Baby Clinic. Group and class conferences. (Academic year—as arranged.) Howard and Staff

471–72 *Pediatric Electives*

(Academic year—as arranged.)

* Staff of Instruction for the academic year 1962–63.

PHARMACOLOGY*

Professor H. G. Mandel *(Chairman)*
Clinical Professor R. G. Smith
Professorial Lecturer B. B. Brodie
Associate Professors Clarke Davison, G. G. Lu
Assistant Professors V. H. Cohn, Jr., T. M. Farber, Paul Mazel, Melvin Reich *(Research)*, J. F. Henderson *(Research)*, Elizabeth Tidball *(Research)*, W. P. Weiss *(Research)*

249–50 *Introduction to Medical Research*† (3–3) **Reich and Staff**
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

261 *Pharmacology* (7) **Mandel and Staff**
Lectures, laboratories, and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)

267–68 *Pharmacological Research* (arr.) **The Staff**
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)

269–70 *Pharmacology Seminar* (1–1) **Cohn and Staff**
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)

272 *Physiological Disposition of Drugs* (3) **Cohn, Davison**
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1963–64 and alternate years: spring—as arranged.)

279–80 *Special Topics in Pharmacology* (arr.) **The Staff**
A lecture course dealing with select aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)

281 *Physiological Techniques in Pharmacology* (3) **Farber, Mazel, Tidball**
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and rate of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1963–64 and alternate years: fall—as arranged.)

283 *Biochemical Techniques in Pharmacology* (3) **Cohn, Henderson**
A lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Prerequisite or concurrent registration: Pharmacology 261. (1964–65 and alternate years: fall—as arranged.)

299–300 *Thesis* (3–3) **The Staff**
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

* Staff of Instruction for the academic year 1962–63.
† This is an interdepartmental course. The student should register in the department directing his research.

PHYSICAL MEDICINE AND REHABILITATION*

Professor C. S. Wise *(Chairman)*
Assistant Professor John Watt, Jr.
Assistant Clinical Professors P. A. Klieger, Giuseppe Balsamo
Associates A. B. C. Knudson, F. L. Wenger
Fellow Vehbi Yucel
Assistants Kyoko Ikari, Catherine Ryan

150 ***Elements of Physical Medicine*** The Staff
In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability. (Spring—as arranged.)

352 ***Advanced Physical Medicine*** The Staff
Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties. (Spring—1 hour a week.)

467–68 *Clinical Studies (elective)* The Staff
Clinical teaching and demonstration at the University Hospital. (Academic year—as arranged.)

485 ***Research*** (arr.) The Staff
Open to medical students and qualified nonmedical students. (Fall—as arranged.)

PHYSIOLOGY*

Professors C. E. Leese, E. M. Renkin *(Chairman)*
Associate Professor F. P. J. Diecke
Assistant Professors Ruth Henderson, C. S. Tidball *(Research)*, Margret Westecker
Lecturers Eugene Braunwald, J. F. Hoffman, D. P. Rall, R. J. Podolsky
Associates, K. A. Hubel, P. G. Nelson, J. H. Mitchell, W. B. Wood, S. E. Downing, E. H. Sonnenblick, W. A. Hagins, J. B. Block, W. W. Oppelt, L. D. Prockop
Fellows Barbara Decker, D. B. Evans, Y. B. Fok, Natalie Gavian, N. M. Kaminsky, William Odell, Elizabeth Stephenson

Special Lecturers S. J. Sarnoff, J. H. U. Brown

115 *Introduction to Human Physiology* (3) Leese
Lectures on the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of biological science. (1962–64 and alternate years: fall—TTh 8:45–10 am.)

130 *Psycho-Physiology* (2) Leese
Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. (Spring—TTh 5:10 pm.)

137 *Vertebrate Physiology* (4) Tidball and Staff
Fundamental principles of physiology as exemplified in the vertebrates. Prerequisite: Chemistry 11–12; Mathematics 3; and Physics 11, 12; or the equivalent. Laboratory fee, $18. (Fall—lecture, MWF 11:10–12 am.; laboratory, F 1:10–5 pm.)

* Staff of Instruction for the academic year 1962–63.

150 *Medical Physiology* Renkin and Staff
Lecture and laboratory work in all divisions of physiology. This course is designed for medical students. (Spring—lecture 7 hours a week, laboratory 9 hours a week.)

170 *General Physiology* (3) Westecker
Lectures on basic topics in the physiology of cells and tissues. Prerequisite: Physiology 137 or 150, or Botany 135; and the consent of the instructor. (Spring—T 11:10–12 am., Th 10:10–12 am.)

211–12 *Problems in Physiology* (arr.) Renkin and Staff
Directed study under the supervision of a staff member. Prerequisite: Physiology 137, 150, or 232, and the consent of the instructor. (Academic year—as arranged.)

221–22 *Physiology Seminar* (1–1) Henderson and Staff
Prerequisite: Physiology 137, 150, or 232, and a reading knowledge of French or German. (Academic year—as arranged.)

232 *Advanced Mammalian Physiology* (10) Diecke and Staff
Lecture 7 hours a week, laboratory 9 hours a week. Prerequisite: Chemistry 11–12; Mathematics 3; Physics 11, 12; or the equivalent. It is recommended that Biochemistry 221–22 be taken as a prerequisite or concurrently. (Spring—MWF 1–5 pm.; TTh 1–3 pm.)

259 *Comparative Physiology* (2) Diecke
Lectures and seminars on topics of current interest in comparative physiology, with emphasis on nonmammalian forms. Prerequisite: Physiology 137, 150, 170, or 232, or Zoology 162; and the consent of the instructor. (1964–65 and every third year: fall —as arranged.)

265 *Physiology of Cell Membranes* (2) Renkin
Lectures and seminars on ionic and molecular transport through biological membranes. Prerequisite: Chemistry 111–12 or Physics 181; *and* Physiology 150, 170, or 232, or Botany 135–36; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

281 *Biophysics* (2) The Staff
Lectures and seminars on biological topics which require development along physical lines. Prerequisite: Chemistry 111–12 or Physics 181 and the consent of the instructor. (1963–64 and every third year: fall—as arranged.)

295–96 *Research* (arr.) The Staff
Prerequisite: Physiology 137 and 170; 150 or 232; or the equivalent. (Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor J. F. Sadusk, Jr., *(Chairman)*
Clinical Professor Murray Grant
Clinical Instructor A. H. Traum

Special Lecturers R. C. Cook, W. J. Peeples, G. O. Pierce

COURSES TO BE ANNOUNCED.

*PSYCHIATRY**

Professors Leon Yochelson *(Chairman)*, Samuel Yochelson *(Research)*
Clinical Professors Joel Elkes, J. D. Schultz, D. C. Cameron, F. A. Freyhan, D. M. Bullard, Douglas Noble
Associate Professor J. E. Rankin
Associate Clinical Professors H. P. Laughlin, M. deG. Ruffin, Sidney Berman, Morris Kleinerman, Anna Todd, Norman Taub, Leon Ferber, P. H. Gray
Assistant Clinical Professors Sarah Tenenblatt, Richard Schaengold, David Eden, C. T. Bever, Joseph Abrahams, Paul Chodoff, R. M. Greenberg, Helen Pallister, M. L. Adland, W. D. Kehne, H. A. Meyersburg, S. L. Werkman, J. B. Chassan, R. W. Gans, I. W. Kaiser
Associates W. C. Johnson, R. A. Rogers, J. A. Farrell, S. C. Gordon, H. B. Lehrman, R. A. Frank, Helen Pearcy, A. M. Drummond, G. W. Sprehn, N. C. Rintz, Leslie Schaffer, J. L. Sheridan, L. J Duhl, D. W. Harris, A. H. Kiracofe, Jr., T. M. Mackenzie, B. W. Murphy, Daniel Prager, F. N. Waldrop, F. A. Board, R. N. Butler, T. E. Griffin, E. I. Kushner
Clinical Instructors Maxwell Boverman, J. H. Bouma, Jean Menetrez, Bertram Brown, B. L. Burris
Assistants Margret Berendes, G. N. Boyer, W. G. Tompkins, Hugh Van Sickel

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Special Lecturers R. H. Felix, Mathew Ross

165 *Introductory Medical Psychology* — Berman
An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships. (Spring—1 hour a week.)

178 *Psychopathology* — Rankin
Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material. (Spring—1 hour a week.)

266 *Psychiatry* — Yochelson (Spring—
Psychiatry in the practice of Medicine. Techniques of interviewing. hour a week.)

268 *Demonstration Clinics* — Freyhan, Chodoff, and Staff
History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole. Presentation of clinical cases of major mental illnesses and primary behavior disturbances. St. Elizabeths and D. C. General hospitals. (Spring—3 hours a week.)

272 *Psychosomatic Aspects of General Medicine* — Ruffin
Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders. (Spring—1 hour a week.)

324 *Psychoneurosis* — Ferber
Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneurosea. Medical Conference Room, D. C. General Hospital. (Spring—1 hour a week.)

431–32 *Clinical Clerkship* — The Staff
Supervised examination, diagnosis, and treatment of ambulatory cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital. (Three weeks divided service as arranged during academic year.)

* Staff of Instruction for the academic year 1962-63.

RADIOLOGY*

Professor W. W. Stanbro *(Chairman)*
Associate Clinical Professor H. J. Kicherer
Assistant Professor C. F. Murphy
Assistant Clinical Professors Charlotte Donlan, S. R. Bersack, H. L. Berman, J. T. Brennan, Albert Bauer, Henry Harrell, A. C. Wyman
Associate S. W. Smith
Instructor W. J. Nelson
Clinical Instructors George Tievsky, U. V. Wilcox II, C. M. Weber, Nan Van Wagenen, Zeki Erim
Fellow R. F. Owen
Assistants A. S. Cigtay, Olcay Cigtay, H. M. Hagen, R. B. Merlo, Margaret Mones, L. W. Stanton, L. N. Sweet

115–16 *Anatomy* — The Staff
Correlation of gross and Roentgen anatomy. (Academic year—as arranged.)

220 *Principles of Radiology* — The Staff
Lectures and discussions. (Spring—1 hour a week.)

313 *Advanced Radiological Diagnosis* — The Staff
Lectures and discussions. (Fall—as arranged.)

421–22 *Clinical Studies* — The Staff
Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

SURGERY*

Professors Brian Blades *(Chairman)*, C. T. Klopp
Clinical Professors W. S. McCune, V. M. Iovine, Alec Horwitz, G. A. Higgins, Jr., J. P. Adams, G. S. Letterman
Associate Professors P. C. Adkins, H. C. Pierpont
Associate Clinical Professors H. L. Feffer, J. R. Thistlethwaite, Don Wenger
Assistant Professors N. P. D. Smyth, T. C. Alford
Assistant Clinical Professors B. F. Dean, Jr., J. S. Neviaser, J. B. Harrell, L. T. Peterson, Thomas Bradley, Murdock Head, R. G. Kindred, Ernest Brav
Associates W. R. Morris, J. J. Weinstein, W. C. Meloy, K. H. Wood, Isabella Harrison, Maxine Schurter, Charles Keck
Instructors E. H. Izawa, Takeo Tsunekawa
Clinical Instructors C. D. Briggs, J. F. Conlon, D. C. Richtmeyer, Leon Gerber, E. A. Gould, A. B. Rohrbaugh, Jr., M. H. Kendrick, B. G. Brown, J. D. Hoyle, R. R. Smith, N. H. Isaacson, C. S. White, Jr., D. P. McCarty, J. M. Keshishian, R. L. Dow, L. R. Perna, T. M. Wright, D. C. Wherry, J. H. Sager, Frances Brennecke, J. P. Baker, J. W. Canter, R. E. Hughes, H. E. Lane, Jr.
Assistants A. G. Abadier, F. J. Aranguren, D. J. Bauer, R. J. Bleasdell, A. I. Dobranski, W. E. Gentry, T. H. Gresinger, D. B. Groff III, W. F. Hogan, A. B. Iben, R. B. Montgomery, G. B. Reservitz, W. E. Roll, Jr., P. E. Shorb, Jr., G. A. Whipple

* Staff of Instruction for the academic year 1962–63.

284 *Surgical Physiology* — The Staff
A clinical and laboratory course with particular emphasis on applied physiology. (Spring—2 hours a week.)

323–24 *Surgical Pathology I* — Weiss
Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing surgical specimens. (Academic year—1 hour a week.)

373–74 *Clinical Clerkship I* — The Staff
The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital. (Academic year—as arranged.)

375–76 *Outpatient Surgical Clinic* — The Staff
Surgical clinic. D. C. General Hospital. (Forty hours as arranged during academic year.)

377 *Fractures and Orthopedics* — The Staff
Lectures covering the field of fractures and orthopedics. D. C. General Hospital. (Fall—1 hour a week.)

379–80 *Lectures in Surgery* — The Staff
D. C. General Hospital. (Academic year—2 hours a week.)

383–84 *Surgical Clinic* — Blades
Demonstration of various surgical diseases to the entire class. University Hospital. (Academic year—1 hour a week.)

473–74 *Clinical Clerkship II* — The Staff
Six weeks, University Hospital; three weeks, Mt. Alto Hospital. (Academic year—in rotation.)

479–80 *Surgical Staff Conferences* — The Staff
University Hospital. (Academic year—W as arranged.)

483–84 *Surgical Ward Rounds* — Blades
Demonstration of various surgical diseases to fourth-year clerks. University Hospital. (Academic year—1 hour a week.)

491 *Surgical Anatomy II* — Horwitz and Staff
Lectures for fourth-year clerks. University Hospital. (Fall—1 hour a week for twelve weeks in rotation.)

492 *Surgical Pathology II* — Newman
A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically. (Spring—1 hour a week.)

UROLOGY[*]

Clinical Professors L. R. Culbertson *(Chairman)*, E. E. Ferguson
Associate Clinical Professor W. D. Jarman
Assistant Clinical Professors F. T. Reuter, Gilbert Ottenberg
Associates G. R. MacDonald, H. A. Goldberg
Clinical Instructors H. D. Wolff, Jr., H. P. Dorman, W. D. Oldham, John Kenealy

395–96 *Clinic* — The Staff
Clinical teaching and demonstrations on the care of urological patients with special emphasis on the pre- and post-operative management. Operative clinics and clinics teaching. D. C. General Hospital.

[*] Staff of Instruction for the academic year 1962–63.

397 *Urology*

The Staff

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology. (Fall—1 hour a week.)

395-96 *Clinic*

The Staff

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences, with special attention given to diagnostic procedures. University Hospital. (Three hours a week, in rotation, as arranged during academic year.)

THE SCHOOL OF MEDICINE RECORD

1962-63

DEGREES CONFERRED

DOCTOR OF MEDICINE

JUNE 6, 1962

George Robert Allen — Idaho
B.S. 1958, College of Idaho

Kathryn Ann Anderson — D.C.
Herman Barton Apfelbaum — N.Y.
(With distinction)
A.B. 1958, Dartmouth College

Donna Jane Asimont — Calif.
Lee Archer Asimont — Calif.
A.B. 1955, Pacific Union College

James E. Barrett — Mass.
Grover William Bedeau, Jr. — Calif.
A.B. 1958, College of the Pacific

Clyde Laurence Bell, Jr. — Md.
Benne Gene Bendler — Ind.
B.S. 1959, Roosevelt University

Michael Edward Bohan — Del.
A.B. 1958, LaSalle College

Carol Rittenhouse Brie — Va.
B.S. 1958, University of Richmond

Alfred William Brunt, Jr. — Idaho
George Franklin Buerger, Jr. — Pa.
B.S. in Phar. 1957, University of Pittsburgh

Michael Frank Buscemi — N.J.
B.S. 1957, Georgetown University

Terry Mackley Buxton — Idaho
B.S. 1959, University of Utah

William Dayton Carrell, Jr. — Ariz.
A.B. 1957, Stanford University

Joyce Ann Ong Chin — Calif.
A.B. 1958, University of California

Melvin Perry Choolitch — Conn.
B.S. 1959, University of Pittsburgh

Peter Lloyd Crandall — Calif.
A.B. 1958, San Jose State College

Ronald Francis Crown — Md.
B.S. 1958, American University

Sidney Leon Eisenbaum — D.C.
(With distinction)
A.B. 1958, Tulane University

Michael Roy Fogel — Va.
(With distinction)
A.B. 1958, Haverford College

Charles Whitfield Griffiths — Va.
Harold Mayne Griffiths — Calif.
Vincent Livingston Guandolo — Md.
A.B. 1953, Kenyon College

Hubert Maury Gulak — Pa.
B.S. 1958, Duquesne University

Byron Charles Gwinn II — D.C.
A.B. 1955, Duke University

Jeanne Anne Hanaché — N.Y.
A.B. 1958, College of New Rochelle

Leland Forest Haney — Idaho
B.S. 1958, University of Idaho

Robert Michael Henderson — Md.
A.B. 1959, University of Arizona

Talmage Gordon Hiebert — Va.
A.B. 1950, University of Kansas
A.M. 1954, Ph.D. 1956, The George Washington University

Barton Hoexter — N.Y.
A.B. 1958, Kenyon College

Michael G. Hoffman — Ariz.
Arthur Curtis Hurt III — Calif.
A.B. 1958, Stanford University

Richard Hudson Huster
A.B. 1958, Duke University

Mary Marcell Jackson
A.B. 1950, Montana State University

Edward A. Janon
(With distinction)
A.B. 1958, University of Pennsylvania

James Joseph Jardee
B.S. 1960, University of Portland

Lawrence Alan Jones

John Alexander Kachmarick, Jr.

Allen Lloyd Kauffman
B.S. 1958, Wagner Lutheran College

Jack Earl Kundin
(With distinction)

John Marc Lanham
B.S. 1952, College of Idaho

Francis Gerald LaPiana

Francis Marion Leake
A.B. 1958, University of California at Los Angeles

Frederick Byron Liebler
B.S. 1958, University of Pittsburgh

George Andrew Liebler
B.S. 1958, University of Pittsburgh

Floyd D. Loop
B.S. 1958, Purdue University

William Robert Loscher
B.S. 1958, Washington State University

William McKenzie Landie
A.B. 1958, New York University

David George Luthringer
A.B. 1958, Princeton University

John Housden Lane Marshall
B.S. 1958, University of Maryland

John Keith Mason
B.S. 1954, Rocky Mountain College

Joseph Anthony Matan

Preston Brooks Mayson, Jr.
B.S. 1955 U. S. Military Academy

Jo Kent McBeath
B.S. 1957, Idaho State College

James Edward McCreedy
B.S. 1958, Westminster College, Pa.

Assadullah Meymandi-Nejad

Joseph Nicholas Micale
B.S. 1957, Rutgers University

Isidore Mihalakis
B.S. 1958, Moravian College

Robert Henry Morrell
B.S. 1958, University of Oregon

Ronald Eugene Mullen
A.B. 1956, Marion College
B.D. 1956, Northern Baptist Theological Seminary

Manfred R. Nelson

Richard George Nickerson
A.B. 1958, New York University

Darrell K. Oberg
A.B. 1958, University of Pennsylvania

Kevin Daniel O'Brien
A.B. 1958, Boston College

Donald Francis O'Malley
B.S. 1959, University of Pittsburgh

Richard E. Ostler — Idaho
B.S. in Phar. 1950, Idaho State College

Joseph Charles Patti — N.J.
A.B. 1958, Rutgers University

David Noel Peterson — D.C.
B.S. 1958, Brigham Young University

Alfred Karl Pfuster — W. Va.
A.B. 1958, Washington and Jefferson College

David Leon Raphling — D.C.
A.B. 1959, The George Washington University

David Kay Ricks — Idaho
Richard Treffle Roberge — Md.
B.S. 1958, University of Idaho

Bobbie Lee Roberts — Va.
Herman Lloyd Rundle — Calif.
A.B. 1958, University of California at Los Angeles

Kenneth Seeman — N.Y.
A.B. 1958, Franklin and Marshall College

Lawrence John Severino — N.Y.
A.B. 1958, Cornell University

Frank Chadwick Sheldon — N.J.
A.B. 1958, Rutgers University

Harris David Shifrin — Md.
(With distinction)
B.S. 1958, The George Washington University

Robert Vigh Smith — Calif.
Adam Sommerstein — Pa.
B.S. 1958, University of Pittsburgh

James Andrew Sterling — Md.
A.B. 1958, Williams College

Alfredo Timoteo Suéscum — Panama
Vernon Lynn Swenson — Utah
(With distinction)

Lowell Martin Weiss — N.J.
(With distinction)
B.S. 1957, Rutgers University

Edward Gale Whiting, Jr. — Calif.
A.B. 1958, Stanford University

Thomas Russell Whyte — D.C.
B.S. 1958, The George Washington University

Elliot Charles Wilner — D.C.
A.B. 1958, Columbia University

George Lee Wing — Mass.
A.B. 1958, Harvard University

George John Wolcott — Nebr.
A.B. 1958, Dartmouth College

Lawrence Linden Young — Ohio
A.B. 1958, Stanford University

Stanley Burkle Young — Ind.
B.S. 1958, Purdue University

STUDENTS REGISTERED IN THE SCHOOL OF MEDICINE

1962–63

FIRST YEAR

Abt, Arthur B. — N.J.
A.B. 1962, Rutgers University

Adams, William R. — Utah
B.S. 1962, University of Utah

Aebersold, Ronald R. — Texas
A.B. 1962, Austin College

Alexander, Edward G., Jr. — D.C.
A.B. 1962, The George Washington University

Allen, Richard M. — Utah

Ashton, Henry L. — Utah

Barham, Ed D. — Miss.
B.S. 1962, Mississippi College

Basinger, Gerald T. — Calif.

Birkin, Brent B. — Idaho
B.S. 1962, University of Utah

Bishop, Theral M. — Utah

Bryan, David C. — Calif.

Bunnell, Gary L. — Utah

Byers, Glen M. — Mich.
D.D.S. 1962, University of Michigan

Campbell, Craig A. — Calif.
A.B. 1962, University of California

Cannava, Peter E. — N.Y.
B.S. 1962, Mount St. Mary's College

Carruth, Peter S. — Calif.
A.B. 1962, University of California

Chalfant, William P. — Md.
B.S. 1962, The George Washington University

Chervenak, John P. — Pa.
B.S. 1961, University of Pittsburgh

Chrisman, Jane W. — Md.

Cooper, Richard M. — N.J.

Datch, Michael W. — Pa.
A.B. 1962, Washington and Jefferson College

Devorss, James E. — N.J.
B.S. 1962, Muhlenberg College

Don, Sherman — Calif.
B.S. 1956, University of California

Dowling, John N. — Ill.
A.B. 1962, Yale University

Edmonston, Robert M. — Calif.
A.B. 1962, Fresno State College

Eldredge, Walter J. — Utah
B.S. 1962, University of Utah

Ettenson, Stephen C. — N.Y.

Evans, David B. — Va.
B.S. 1960, Muhlenberg College

Fernandez, Richard R. — Puerto Rico
A.B. 1962, Marquette University

Folmar, Raymond H. — Calif.
A.B. 1962, University of California

Franklin, Donald S. — Pa.
A.B. 1962, Washington and Jefferson College

Garra, John S. — N.Y.
B.S. 1962, St. John's University

Gettman, Thomas H. — Calif.
A.B. 1962, University of California

Goldfinger, Paul — N.J.

Grace, Rene E. — S.D.

Graeber, Fred G. — Idaho

Gray, Luther W., Jr. — D.C.
A.B. 1961, University of Pennsylvania

Gregory, Cecilia D. — Md.
B.S. 1956, M.S. 1962, University of Oregon

Griffin, Charles K., Jr. — Calif.
A.B. 1961, University of California

Hamilton, Raymond D. — Calif.
A.B. 1962, University of California

Harbold, Norris B., Jr. — Va.
B.S. 1956, U. S. Military Academy

Harris, James C., Jr.
B.S. 1962, University of Maryland

Haynes, Henry D.
A.B. 1961, Kalamazoo College

Hennings, Charles T.

Hirz, Ronald H.

Hofmann, James W.
B.S. 1962, College of the Holy Cross

Houghton, Edward A.
A.B. 1962, Earlham College

Hutter, Gail S.
A.B. 1961, New York University

Isgreen, William P.
B.S. 1961, University of Utah

Kaany, Enno
B.S. 1962, Springfield College

Katz, Edward B.
B.S. 1949, City University of New York
M.S. 1952, Columbia University

Kaufman, Sam
A.B. 1960, Goshen College

Ku, Robert K.

Kunishi, John T.
A.B. 1962, University of California

Landis, John D.
A.B. 1962, West Virginia University

Lavine, Robert L.

Lew, Ralph
B.S. 1959, University of California

Lewis, Jonathan A.
A.B. 1962, John Hopkins University

Lillis, Frederick P.
A.B. 1962, College of the Holy Cross

Ludewig, Robert M.
A.B. 1962, Ohio Wesleyan University

Luedeman, Gerald W.
A.B. 1962, Harvard University

Mahakian, Charles G.
A.B. 1962, University of California

Mandy, Stephen H.

Mangis, Phillip G.

Martin, Kathryn H.
A.B. 1962, Catholic University of America

McCausland, Arthur M.
A.B. 1962, Duke University

McMullen, Douglas B.
B.S. 1961, University of Idaho

McPherson, Warren F.
A.B. 1961, University of Pennsylvania

Mountjoy, John R.
A.B. 1961, Washington University

Neviaser, Thomas J.
A.B. 1962, University of Pennsylvania

Nielsen, Cantril

Noga, Gerald W.
B.S. 1959, U. S. Military Academy

Norval, Morgan H.

Notes, David R.
A.B. 1962, Harvard University

Noyes, Frank R.
A.B. 1962, University of Utah

Petersen, Kyle W.

Rhoads, Helen J.
A.B. 1962, University of California

Robb, James B.
B.S. 1962, University of Utah

Roush, William R.

Rumana, Robert H.
A.B. 1962, Rutgers University

Rush, William A., Jr.

Saunders, John L.
A.B. 1962, University of Colorado

Scheiner, Monroe I.

Schwartz, Howard S.

Shaw, Coralie
B.S. 1962, Bates College — Mass.
Sherwin, Barbara E.
B.S. 1959, Antioch College — D.C.
Shoemaker, Lester E., Jr.
A.B. 1960, Princeton University — N.J.
Smith, Ronald E.
B.S. 1962, University of Maryland — Md.
Stein, Mitchel J.
B.S. 1962, City University of New York — N.Y.
Stern, Jonathan J.
A.B. 1962, University of Vermont — N.Y.
Tally, Francis P.
A.B. 1962, Providence College — R.I.
Thatcher, Richard W.
Van Sickle, David G.
A.B. 1957, Colgate University — Calif.
Weil, Simon P.
A.B. 1959, University of California — D.C.
Weber, Barry J.
Weiss, Dennis S.
B.S. 1960, University of Pennsylvania — Calif.
Whiteman, John R.
Wilson, Robert M.
B.S. 1959, The George Washington University — N.Y.
Wilson, Ronald G.
A.B. 1962, University of Colorado — N.Y.
Yager, Howard S.
Yenasi, Frederick M.
B.S. 1962, University of Southern California — Md.
Zappia, Rosario R.
B.S. 1961, Iona College — Md.

SECOND YEAR

Anderson, Anthon A. III — Utah
Anderson, Gregory D.
B.S. 1956, University of Utah — Utah
Bagley, Grant P.
B.S. 1961, University of Utah — Utah
Barbano, Nicholas A.
B.S. 1960, Iona College — N.Y.
Bruce, Anthony D.
Bruce, John W.
B.S. 1961, Marietta College — D.C.
Bullock, John W. — Md.
B.S. 1961, University of Maryland — Md.
Burns, Robert W.
A.B. 1961, Ohio Wesleyan University — Va.
Butler, Marlene E.
B.S. 1959, University of Utah — Md.
Butler, Robert E. — Utah
Cahill, Edward B.
Carlisle, Richard W. — Pa.
Carlson, Andrew B. — D.C.
B.S. 1960, McGill University, Canada — Utah
Chase, Roland M. — N.Y.
A.B. 1961, University of Maine — Maine
Chase, Peter D. T.
A.B. 1961, Harpur College — N.Y.
Clough, John D.
B.S. 1961, The George Washington University — Md.
Coover, Garrett H.
A.B. 1958, Waynesburg College — N.J.
Crum, Sherian L.
Curtis, Charles Y.
A.B. 1961, Johns Hopkins University — Utah
Dalmore, Michael T. — Va.
Dennis, Gerald L.
B.S. 1960, American University — Pa.
Farrell, Donald F. — W.Va.
Fiske, William J., Jr.
A.B. 1961, Washington and Lee University — Calif.
Fox, Robert G. — Va.
Frank, John L.
B.S. 1961, College of the Pacific — Calif.
Fraser, Ula K. M.
B.S. 1961, University of Maryland — Md.
Freese, Ulla K. M. — Calif.
Fortune, William P.
B.S. 1953, Springfield College — Calif.
Freeland, Alan E.
A.B. 1961, Johns Hopkins University — Ohio
Gemmen, Roger J.
Goodridge, Thomas H. — Mich.
A.B. 1961, Dartmouth College — Md.
Goodstein, Richard K.
B.S. 1961, Michigan State University of Agriculture and Applied Science — N.J.
Gould, Barry K.
Haffner, William H. J. — D.C.
A.B. 1961, Wesleyan University — N.J.
Hardy, Kent M.
Hazelton, Warren C., Sr. — Utah
Herr, John R. — Maine
B.S. 1961, Juniata College — Pa.
Herwick, Paul O.
B.S. in Phar. 1960, University of Pittsburgh — Pa.
Herzinger, Raymond G.
B.S. 1961, Brigham Young University — Idaho
Hicks, John A.
A.B. 1960, Occidental College — Calif.
Hirschberg, Stanley M.
A.B. 1961, Rutgers University — N.J.
Hodgell, Robert D.
A.B., B.S. in Med. Tech. 1959, University of Colorado — Colo.
Jonas, Cecil R.
B.S. 1960, Howard University — British Guiana
Jones, Thomas L. — Va.
Kaplan, Sheldon J. — N.Y.
Kaplan, Stuart L. — D.C.
A.B. 1961, The George Washington University
Kearney, Gary P. — Calif.
A.B. 1961, Northwestern University
Koo, Andrew H. C. — Hong Kong
Kotzen, Stephen A. — Fla.
B.S. 1961, University of Miami
Koval, Norman S. — N.J.
B.S. 1961, The George Washington University
Laughrun, William A., Jr. — N.C.
A.B. 1955, Wake Forrest College
Lopez-Moline, Carmen M. — Puerto Rico
Lorentz, Mary M. — Md.
A.B. 1961, Trinity College
Mast, William C. — Ariz.
B.S. 1961, University of Arizona
Mathios, Anthony J. — Calif.
Matz, Marvin I. — N.Y.
B.S. 1957, City University of New York
Mazzuchi, Daniel S. — Md.
B.S. 1961, College of the Holy Cross
McDougal, Bud H. — Idaho
B.S. 1961, University of Idaho
McElhaney, Robert D. — Wyo.
A.B. 1961, Central Washington College of Education
McPhetres, David W. — Alaska
A.B. 1961, Whittier College
Mering, James H. III — Fla.
Miller, Karl S. — N.J.
B.S. 1961, Mount Saint Mary's College
Millward, David K. — N.Y.
B.S. 1961, Tufts University
Mitchell, John H. — D.C.
A.B. 1961, Ohio Wesleyan University
Moesinger, Robert L. — Utah
Morris, Gerald G. — Va.
Musick, Roy S. — D.C.
B.S. 1961, The American University
Nixon, Maureen K. — N.Y.
A.B. 1961, Catholic University of America
Odenwald, Robert P. — D.C.
B S. 1961, College of the Holy Cross
O'Neill, Thomas M. — D.C.
A.B. 1961, Catholic University of America
Oxley, David W. — Iowa
A.B. 1961, Drake University
Paolillo, Richard D. — Conn.
B.S. 1961, College of William and Mary

Pazzaglini, Mario P. — N.Y.
A.B. 1961, Harpur College
Politz, Lawrence — D.C.
Pomerantz, Ruth — N.Y.
A.B. 1961, Brooklyn College
Renfield, Marilyn L. — Va.
Reynard, John S. — Calif.
A.B. 1961, Stanford University
Rogers, Jerry B. — Mo.
B.S. 1960, University of Maryland
Runge, Peter J. — N.Y.
B.S. 1961, Villanova University
Secrist, Delbert L., Jr. — Ariz.
A.B. 1961, Stanford University
Seymour, John C. — N.Y.
A.B. 1961, Brown University
Shively, Harold H., Jr. — Conn.
A.B. 1959, Wesleyan University
Steinbrenner, Roger W. — Calif.
A.B. 1961, University of California
Stemerman, Michael B. — N.Y.
A.B. 1961, University of Rochester
Stiber, Andrew J. — N.J.
A.B. 1961, University of Michigan
Stonefeld, Donald F. — Ohio
B.S. 1961, Ohio State University
Stones, Carl — Idaho
Strother, George W. — Pa.
B.S. 1960, University of Pittsburgh
Taylor, Paul C. — Ohio
A.B. 1961, Miami University
Tegtmeyer, Charles J. — Md.
A.B. 1961, Colgate University
Ugel, Arthur R. — D.C.
B.S. 1961, The George Washington University
Vanderford, John W. — Idaho
B.S. 1955, Utah State University of Agriculture and Applied Science
A.M. 1959, University of California
Viewes, Walter V. R., Jr. — Va.
B.S. 1957, U.S. Naval Academy
Walen, Harry M. — Md.
B.S. 1961, University of Maryland
Warden, William B. — W.Va.
Webster, Gerald B. — Ariz.
A.B. 1961, Arizona State University
White, Allen C. — Calif.
A.B. 1961, Occidental College
Wolf, Robert R. — N.J.
A.B. 1961, Rutgers University

THIRD YEAR

Anderson, Danny F. — Ga.
B.S. 1960, Furman University
Anderson, Harold F. — Calif.
A.B. 1960, Los Angeles State College of Applied Arts and Sciences
Anderson, Todd E — Ill.
A.B. 1960, DePauw University
Anderson, William S. — Pa.
B.S. in C.E. 1956, Duke University
Barthelmess, Randall A. — Mont.
B.S. 1960, Montana State College
Beachy, Lester — Pa.
Belsky, Burton L. — Pa.
A.B. 1960, University of Pennsylvania
Bessin, Rolf H. — Venezuela
A.B. 1960, Johns Hopkins University
Blakesley, Samuel R. — Ariz.
B.S. 1959, University of Arizona
Boas, Edward L. — Idaho
B.S. 1960, University of Idaho
Brady, John F. — R.I.
A.B. 1960, Providence College
Brazinsky, John H. — D.C.
B.S. 1960, University of Notre Dame
Brink, Edward W — Conn.
A.B. 1960, Trinity College
Buchanan, John G — D.C.
A.B. 1960, Amherst College
Burdge, David C. — Va.
B.S. 1958, The George Washington University
Carlson, Dwight L. — Calif.
Carvalho, Richard S. — R.I.
B.S. 1958, University of Rhode Island
Chan, Philip K. — Ca...
Cope, John R. — Fa.
B.S. in Phar. 1960, University of Pittsburgh
Cottle, Aaron D. — W.Va.
Daines, Jonathan H. — Utah
Ebert, Charles D. — W.Va.
A.B. 1960, West Virginia University
Edwards, Charles B. — Utah
B.S. 1960, Brigham Young University
Falor, Stanley L. — Ohio
B.S. 1958, Ohio State University
Flanagan, William C. — N.J.
A.B. 1960, University of Virginia
Frank, William G. — Va.
B.M.E. 1949, University of Louisville
B.D. 1952, Virginia Theological Seminary
Gaither, Robert H. — Md.
A.B. 1960, Johns Hopkins University
Gardner, Harvey R. — Utah
A.B. 1958, University of California
Gelet, Theodore R. — Pa.
B.S. 1959, Pennsylvania State University
Gendelman, Seymour — Pa.
B.S. Phar. 1953, Temple University
Hallahan, William F. — N.J.
B.S. 1960, Mount Saint Mary's College, Md.
Hansen, Kenneth R. — Idaho
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Hanssen, Carl A. — N.J.
A.B. 1952, Princeton University
Hinz, William M. — Wis.
Holmes, John L. — Wash. D.C.
House, Homer C. — D.C.
B.S. 1959, Washington and Lee University
Hunter, Allan A. — D.C.
A.B. 1960, The George Washington University
Hurston, Ronald O. — Calif.
A.B. 1960, Yale University
Hushaw, John R. — D.C.
A.B. 1960, Occidental College
Iscoitz, Samuel B. — Utah
Jacobson, Cecil Bryant — D.C.
B.S. 1960, University of Utah
Kass, Martin B. — Calif.
Kent, Roy D. — Idaho
A.B. 1958, San Jose State College
Kindred, Clifford J. — Fa.
A.B. 1955, Brigham Young University
Kniep, William M. — Mas...
A.B. 1955, University of Florida
Koslow, Joel L. — Pa
A.B. 1960, Harvard College
Kulaga, Stanley F., Jr. — N.J.
B.S. 1960, Temple University
Lima, John B. — D.C.
A.B. 1960, New York University
Lobl, Lawrence T. — Ohio
A.B. 1960, The George Washington University
Lose, George W. — Pa.
Lyle, Jerry M. — Pa.
Madsen, George F. — Utah
Maoury, Stanley D. — N.J.
Mayersak, Jerome S. — Wa...
A.B. 1960, Johns Hopkins University
Milne, Milton J. — Calif.
B.S. 1957, University of California
Morales, Braulio A. — Costa Rica
A.B. 1960, Lafayette College
Morris, David L. — Ca...
A.B. 1958, University of California
Myers, Norman C. — Pa.
A.B. 1960, Washington and Jefferson College

Nevinger, Jules S.
B.S. 1959, Morris Harvey College — D.C.
Newell, Peter J.
A.B. 1960, Occidental College — N.M.
Niklas, Richard A.
A.B. 1958, Cornell University — D.C.
Nuntheff, Peter
A.B. 1960, Western Reserve University — Ohio
Norcross, Frederick C.
A.B. 1960, University of Pennsylvania — Md.
Patterson, Robert D.
A.B. 1960, University of Missouri — Mo.
Perry, James P.
A.B. 1960, Middlebury College — Texas
Pice, Ruthann
A.B. 1959, Boston University — Ill.
Pontieriac, Rodney V.
Regan, Robert M.
A.B. 1957, Hamilton College — W.Va.
Rice, Russell R.
A.B. 1960, University of Virginia — D.C.
Rose, Leslie I.
A.B. 1960, The George Washington University — N.J.
Saito, Mary K.
A.B. 1960, The George Washington University — D.C.
Sanchez-Raffucci, Luis A.
B.S. 1960, Georgetown University — Va.
Singer, Karl L.
B.S. 1956, Washington State University — Puerto Rico
Stearman, Mandell D.
Strenbert, George E.
B.S. 1960, Moravian College — Wash.
Summerman, Herbert I.
B.S. 1960, Long Island University — D.C.
Tasaki, Richard W.
A.B. 1960, Stanford University — N.J.
Tarasuk, Albert P.
A.B. 1960, The George Washington University — Calif.
Tonge, Richard A.
B.S. 1959, Long Beach State College — N.Y.
Tyson, Roger L.
B.S. 1959, University of Idaho — Calif.
Vevergants, Egils
B.S. 1957, University of New Hampshire — Idaho
Warshofsky, Leonard
B.S. 1959, The George Washington University — N.H.
Webster, Thomas M.
A.B. 1960, University of Virginia — D.C.
Weinz, Gary B.
A.B. 1960, Brigham Young University — Va.
White, Gilbert L.
A.B. 1956, Stanford University — Utah
Wiger, Charles R.
B.S. 1960, American University — Calif.
Woerner, Walter S., Jr.
A.B. 1960, Stanford University — Md.
Zapiec, Robert J.
A.B. 1956, University of Rochester — Calif.
Zimmerman, Jack E.
B.S. 1960, University of Maryland — N.Y.
Pa.

FOURTH YEAR

Barker, William A.
Beaver, Harry C.
B.S. 1959, Wheaton College — Pa.
Bradley, Fenwick P. — Pa.
Brauer, Joel D.
Brown, Blackwell S. — Wash.
Cockerham, Frank M. — Md.
Dreyer, Thomas E. — D.C.
B.S. 1958, San Diego State College — N.J.
Duke, James S.
B.S. 1959, Juniata College — Calif.
Endicott, John T.
A.B. 1956, Stanford University — N.J.
Calif.

Clothier, Walter J.
B.S. 1957, Carroll College — Wis.
Cohen, Allen B
A.B. 1960, The George Washington University — D.C.
Cohen, Paul G
A.B. 1959, University of Buffalo — N.Y.
Colella, Michael E
A.B. 1959, Hamilton College — N.Y.
Cutshall, Quay B
B.S. 1959, Washington State College — Wash.
Daltorio, Ronald A.
A.B. 1959, Washington and Jefferson College — Pa.
Dear, Steven R.
A.B. 1959, University of California — Calif.
Denaro, Frank
B.S. 1959, College of William and Mary — N.Y.
Denison, Edward K.
Dermody, William H. III
B.S. 1959, University of Scranton — W.Va. Pa.
Diaz-Granados, Esteban
B.S. 1959, Fordham University — Colombia
Dornfeld, Leslie
A.B. 1959, Rutgers University
A.B. 1959, LaSalle College — N.J.
Fagan, Walter J.
Finn, Richard S.
B.S. 1954, Rutgers University — Pa. N.J.
Fleischner, Gerald M.
A.B. 1959, Lafayette College — N.Y.
Foer, Warren H.
Ganz, Joel — D.C. N.Y.
Goodman, David H.
A.B. 1959, University of Pennsylvania — D.C.
Greenberg, Peter L.
A.B. 1959, Johns Hopkins University — D.C.
Hair, Carolyn J.
A.B. 1959, Woman's College of the University of North Carolina — N.C.
Harvey, Jack W.
B.S. 1959, The George Washington University — W.Va.
Higgins, Robert M.
Hobson, Robert W. — Ill. Va.
B.S. 1959, The George Washington University
Hoffman, Charles J.
B.S. 1959, The George Washington University — D.C.
Horowitz, Martin I.
A.B. 1959, Rutgers University — N.J.
Hovey, Leslie M.
A.B. 1959, University of California — Calif.
Huffman, Ray T.
B.S. 1956, Bowling Green State College — Ohio
Huffman, Stanley R.
B.S. 1959, University of Kentucky — Ky.
Hutton, John E.
A.B. 1953, Wesleyan University — N.J.
Judd, Howard L.
Kadell, Barbara M.
A.B. 1958, University of Michigan — Calif. N.Y.
King, Jerome S.
A.B. 1959, University of Virginia — Ohio
Koldinger, Ralph E.
A.B. 1959, Stanford University — Calif.
Kruse, John C.
A.B. 1959, Duke University — Ohio
Kuhlman, James M.
A.B. 1959, University of Michigan — Mich.
Laroff, Anita I — Switzerland
Lazarus, Gerald S. — N.Y.
A.B. 1959, Colby College
Lewis, Walter J. — Ala.
A.B. 1955, Birmingham Southern College
Lyle, Sanford P. — N.Y.
A.B. 1959, University of Rochester
McBride, Albert
Meade, William S. — N.M. D.C.
B.S. 1957, The George Washington University

Merrill, Keith W. — Canada
Michelis, Michael F.
A.B. 1959, Columbia University — N.Y.
Miller, Meredith H.
A.B. 1959, Johns Hopkins University — N.Y.
Minas, Thomas F.
A.B. 1956, University of Arizona — Ariz.
Modlin, Barry
B.S. 1958, M.S. 1959, The George Washington University — D.C.
Moede, Austin L.
A.B. 1959, University of California — Calif.
Mrkich, Robert — Pa.
Murray, Robert O.
A.B. 1959, University of Utah — Utah
Peabody, Robert R.
A.B. 1958, Stanford University — Calif.
Polidoro, Joseph R.
A.B. 1959, Rutgers University — Conn.
Pou, Jose M.
B.S. 1959, Catholic University of Puerto Rico — Puerto Rico
Purcell, Lawrence T.
A.B. 1959, Dartmouth College — N.J.
Purpura, Anthony G. — N.Y.
Rabbitt, Robert W.
A.B. 1959, Catholic University of America — Md.
Reed, James W. — Md.
Reister, Henry C.
A.B. 1954, Princeton University — D.C.
Richardson, Eugene L.
B.S. 1959, Montana State College — Mont.
Robinson, John N.
B.S. 1957, University of Maryland — Md.
Sacks, Richard P.
A.B. 1959, Bucknell University — D.C.
Saunders, Barney S.
A.B. 1959, University of Colorado — D.C.
Schemmer, Kenneth E.
B.S. 1959, Purdue University — Va.
Sedgewick, Lloyd E.
A.B. 1959, University of Virginia — Idaho
Shaw, James T.
B.S. 1959, Brigham Young University — Oreg.
Shepard, Dennis D.
B.S. 1959, Oregon State College — Pa.
Skelly, Thomas D. — Wash.
Slichter, Sherill J.
A.B. 1959, Washington State College — Va.
Smith, Mark A.
A.B. 1959, Virginia Military Institute — Panama
Suescum, Rafael A. — N.Y.
Sullivan, Eugene H.
A.B. 1957, Williams College — Mont.
Svoboda, Joseph R. — N.Y.
Taber, David O. — Utah
Taggart, Dennis D. — D.C.
Tomar, Russell H.
A.B. 1959, The George Washington University — N.J.
Toomy, William N. — Calif.
Trout, Eugene R.
A.B. 1959, University of California — D.C.
Ward, George W.
B.S. 1956, U.S. Military Academy — Ariz.
Ward, Neil O.
B.S. 1956, University of Arizona — Wyo.
White, Jerald D.
B.S. 1959, Brigham Young University — Calif.
Wong, Michael J.
A.B. 1959, Stanford University — Utah
Wootton, Devere G.
B.S. 1959, Brigham Young University — I.
Young, Elizabeth Bish
B.S. 1959, Purdue University

SUMMARIES OF REGISTRATION 1962–63

NUMBER OF REGISTRANTS

Class entering 1962	102
Class entering 1961	96
Class entering 1960	89
Class entering 1959	91

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama	1	New York	45
Alaska	1	North Carolina	2
Arizona	5	North Dakota	1
California	51	Ohio	11
Colorado	2	Oregon	2
Connecticut	7	Pennsylvania	24
District of Columbia	49	Rhode Island	3
Florida	2	South Dakota	1
Georgia	1	Texas	2
Hawaii	1	Utah	26
Idaho	13	Virginia	20
Illinois	6	Washington	5
Iowa	1	West Virginia	8
Kentucky	1	Wisconsin	3
Maine	2	Wyoming	3
Maryland	30	Puerto Rico	4
Massachusetts	2	British Guiana	1
Michigan	4	Canada	1
Mississippi	1	China	1
Missouri	2	Colombia	1
Montana	2	Costa Rica	1
New Hampshire	1	Hong Kong	1
New Jersey	23	Panama	1
New Mexico	2	Venezuela	1

GRADUATES OF COLLEGES REGISTERED IN THE SCHOOL OF MEDICINE

American University	3	City University of New York	3
Amherst College	1	Colby College	1
Antioch College	1	Colgate University	2
Arizona, University of	4	College of Wooster	1
Austin College	1	Colorado, University of	3
Bates College	1	Columbia University	2
Bethany College	1	Cornell University	1
Birmingham Southern College	1	Dartmouth College	2
Boston University	1	De Pauw University	1
Bowling Green State University	1	Drake University	1
Brigham Young University	1	Duke University	4
Brooklyn College	6	Earlham College	1
Brown University	2	Fairleigh Dickinson College	1
Bucknell College	1	Florida, University of	1
Buffalo University	1	Fordham University	1
California, University of	1	Fresno State College	1
Carroll College	22	Furman University	1
Catholic University of America	1	George Washington University, The	25
Catholic University of Puerto Rico	4	Georgetown University	1
Central Washington College of Education	1	Gettysburg College	1
	1	Goshen College	1

Hamilton College	2
Harpur College	2
Harvard University	1
Howard University	4
Holy Cross, College of the	4
Idaho, University of	2
Iona College	8
Johns Hopkins University	2
Juniata College	1
Kalamazoo College	1
Kentucky, University of	2
Lafayette College	1
LaSalle College	1
Long Beach State College	
Los Angeles State College of Applied Arts and Sciences	1
Louisville, University of	1
Maine, University of	1
Marietta College	1
Marquette University	10
Maryland, University of	1
McGill University, Canada	1
Miami University	1
Miami, University of	
Michigan State University of Agriculture and Applied Science	1
Michigan, University of	4
Middlebury College	1
Mississippi College	1
Missouri, University of	1
Montana State College	2
Moravian College	1
Morris Harvey College	1
Mount St. Mary's College	4
Muhlenberg College	2
Nebraska, University of	1
New Hampshire, University of	1
New York University	2
Northeastern State College	1
Northwestern University	1
Notre Dame, University of	1
Occidental College	4
Ohio State University	2
Ohio Wesleyan University	3
Oregon, State College of	1
Oregon, University of	1
Pacific, University of the	1
Pennsylvania State University	1
Pennsylvania, University of	1
Pittsburgh, University of	1
Princeton University	1
Providence College	1
Purdue University	1
Rhode Island, University of	1
Rochester, University of	1
Rutgers University	1
Saint John's University	1
San Diego State College	1
San Fernando Valley State College	1
San Francisco, University of	1
Scranton University	1
Southern California, University of	1
Springfield College	1
Stanford University	1
Temple University	1
Tufts University	1
Trinity College (D. C.)	1
Trinity College (Conn.)	1
United States Military Academy	1
Utah State University of Agriculture and Applied Science	1
Utah, University of	1
Vermont, University of	1
Villanova University	1
Virginia Military Institute	1
Virginia, University of	1
Wake Forrest College	1
Washington and Jefferson College	1
Washington and Lee University	1
Washington State College	1
Washington University	1
Waynesboro College	1
Wesleyan University	1
West Virginia University	1
Western Reserve University	1
Wheaton College	1
William and Mary, College of	1
Williams College	1
Whittier College	1
Woman's College of the University of North Carolina	1
Yale University	1
Number of College Graduates	305
Number of Colleges Represented	120

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AFFILIATED HOSPITALS



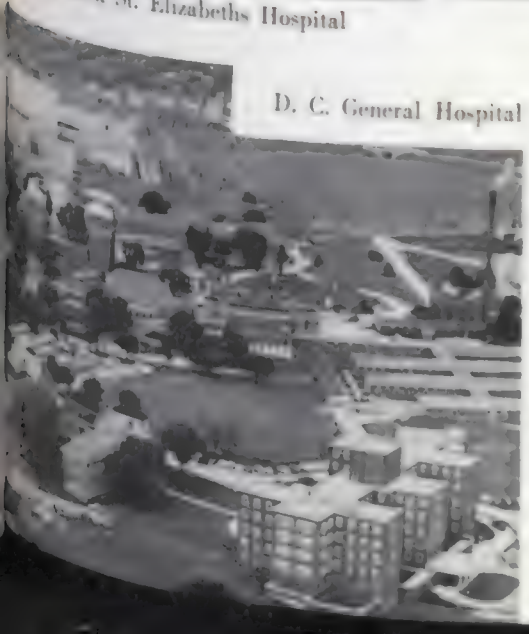
Mount Alto Veterans Administration Hospital



...ulting Unit, St. Elizabeths Hospital



Children's Hospital



D. C. General Hospital



Fairfax Hospital



The George Washington University Hospital—Clinic Entrance

THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), and Doctor of Business Administration (D.B.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), and Master of Public Administration (M.P.A.)

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THE GEORGE WASHINGTON UNIVERSITY, 1821

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The George Washington University

Bulletin



THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

1963-64

WASHINGTON 6, D. C.
NOVEMBER 1962
Vol. LXII No. 3

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Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

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TOMPKINS HALL OF ENGINEERING

The George Washington University

BULLETIN

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE 1963-64

VOLUME LXII NOVEMBER 1962 NUMBER 3

PREFATORY NOTE

The undergraduate study program described in this CATALOGUE is a new approach to educational preparation for careers in engineering and applied science. The program, which was developed during a three-year period of study and experimentation, is unique in the United States.

All students entering undergraduate study in the School, at any level, in September 1963 and thereafter will follow this program.

Students who were enrolled in undergraduate curricula in the School in the 1963 spring semester may elect either to continue study in the curriculum in which they were then enrolled, until their graduation or June 1966 whichever is earlier, or to enter the new program at the level corresponding to their status in September 1963. In the latter case all course credit completed will apply in the new program. Students with at least 60 hours of credit will be placed in the Intermediate Level; those with at least 90 hours, in the Advanced Level; those with less than 60 hours, in the Introductory Level. Evaluation examinations will not be required for such transfer. Students must make their election when they register in September 1963; those entering the Advanced Level must declare their degree objectives at that time.

Graduate programs are continued without change. However graduate students should note changes in the designation of courses and modify their enrollments accordingly.


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GEORGE WASHINGTON
UNIVERSITY
Union Station
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Shakespeare
Library
Supreme Court
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Archives Bldg
Federal
Trade Comm
Dept of Justice
Treasury Dept
Post Office
Dept
WHITE
HOUSE
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University Hospital
National Gallery of Art
Natural History Bldg
Dept of Commerce
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Interior
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Voice of America
Dept of Health Education and Welfare
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Monument
Nat Academy of Sciences
Lincoln Memorial
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1963

July

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September

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1964

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July

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September

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October

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November

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December

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THE CALENDAR 1963-64

FALL SEMESTER

Advising: freshmen	Sept 11–18	Wed–Wed
Placement tests: entering students	Sept 12	Thurs
Orientation Assembly: all new students	Sept 13	Fri
Curriculum Assemblies: new students attend one	Sept 13 and 16	Fri and Mon
Advising: transfer students and upper classmen	Sept 16–18	Mon–Wed
Registration	Sept 19–21*	Thurs–Sat
Application for Feb graduation due in Registrar's Office		
Classes begin	Sept 23	Mon
Subjects of Master's theses of Feb candidates due	Oct 4	Fri
Veterans Day. Holiday	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
D.Sc. dissertations of Feb candidates due	Dec 2	Mon
Graduate Record Examination	Dec 14	Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
Classes resume	Jan 2	Thurs
Master's theses of Feb candidates due	Jan 2	Thurs
Last day of fall semester classes	Jan 15	Wed
Examination period	Jan 20–25	Mon–Sat

SPRING SEMESTER:

Advising: freshmen, sophomores, all new students	Jan 20–29	Mon–Wed
Placement tests and waiver examinations	Jan 27	Mon
Registration	Jan 30–Feb 1*	Thurs–Sat
Application for June graduation due in Dean's Office		
Spring semester classes begin	Feb. 3	Mon
Subjects of Master's theses of June candidates due	Feb 7	Fri
Winter Convocation	Feb 22	Sat
Spring recess	March 25–31	Wed–Tues
D.Sc. dissertations of June candidates due	April 1	Wed
Master's theses of June candidates due	April 6	Mon
Graduate Record Examination	April 11	Sat
Last day of spring-semester classes	May 20	Wed
Examination period	May 23–29	Sat–Fri
Memorial Day. Holiday	May 30	Sat
Baccalaureate Service	June 7	Sun
Commencement	June 7	Sun

SUMMER SESSIONS:

Registration for eight-week term	June 22	Mon
Classes begin	June 23	Tues
Independence Day. Holiday	July 4	Sat
Eight-week term ends	Aug 14	Fri
REGISTRATION FOR FALL SEMESTER 1964–65	Sept 17–19	Thurs–Sat

* Thursday and Friday from 12:00 to 8:00 P.M.; Saturday from 10:00 A.M. to 1:00 P.M.

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE 1903-04

A PROFILE

. . . . *The School of Engineering and Applied Science is a professional School in a University comprised of ten degree-granting schools and colleges.*

. . . . *The University is the only private nonsectarian institution of higher education in the Nation's Capital, located in the center of Washington.*

. . . . *Students live in the midst of the city's life, with all its opportunities for cultural and intellectual development. In a very real sense college life is integrated into the pattern and culture of modern society, providing a most favorable environment for the development and maturing of the student to take his place in the world of today.*

. . . . *Curricula emphasize theory, analysis, and design for productive careers in modern science and engineering.*

. . . . *The University is accredited by the Middle States Association of Secondary Schools and Colleges; engineering curricula are accredited by the Engineers Council for Professional Development.*

THE SCHOOL

Every school has some features that distinguish it from other schools and give it a distinctive character or nature. These may be ivy-covered halls, a particular strength of faculty in some area, a location, a student body with certain characteristics. It is necessary that a student know the character of the school before he can make an intelligent decision to undertake his educational development there. It is our purpose here to give the prospective student such information about this School.

The School of Engineering and Applied Science is a professional school in a University comprised of ten degree-granting schools and colleges. The University is the only private nonsectarian institution of higher education in the Nation's Capital. It is an urban institution located in the center of the city. Its students are in the midst of the city's life with all its opportunities for cultural and intellectual development. In a very real sense college life is integrated into the pattern and culture of modern society, providing a most favorable environment for the development and maturing of the student to take his place in the world of today.

The School regards its purpose to be the education of men and women, in all desirable aspects of preparation, for productive careers in engineering and applied science. We believe we have the function and responsibility to provide an environment and discipline that encourages and fosters development of the whole individual, with an understanding of the society he will serve as well as a high competence in science and technology. The engineer and the applied scientist work for the benefit of humanity: to do so well and responsibly requires that they comprehend the behavior of human beings in addition to the behavior of machines or materials.

The School recognizes the individual student as the single most important element in the educational process. As individuals are distinctive, there can be no single educational formula or pattern by which the student may be led to professional competence. Therefore attention is centered on the individual, seeking that particular combination that will encourage and assist him to his utmost effort in his development. The school provides opportunity for many educational experiences, and encourages him to explore many paths toward his goal. He is given much personal freedom, but freedom tempered with responsibility to accept the consequences of his actions and decisions and restrained by the ethics, practices, and rules of the profession he is preparing to enter.

We recognize the essential unity of science and technology, of engineering and applied science. In our curricula strong emphasis is placed on knowledge which is fundamental and has continuing application. Major attention is given to acquisition of competence in theory, analysis, and design, to the end that the individual may possess the means for translating his ideas into reality. Imagination and creativity are encouraged in preference to memorization of technical detail. We aim toward understanding and comprehension rather than training for a job.

The demands of a professional career in engineering or applied science are exacting. We believe the student should be exposed to these demands in his preparation, as a part of his learning process. He is encouraged to explore the limits of his capability, and is assisted when he makes mistakes. He learns by doing and by the correction of his errors and mistakes. He is never penalized for trying but he must try.

The atmosphere of the School is one of serious-minded effort toward mature development. Students work closely with faculty members and often develop very real friendships. The student body is close-knit and has a high sense of responsibility and loyalty to its individual members and to the School.

The student body numbers about 1,200, divided almost equally between graduate and undergraduates. Approximately half of the students come from throughout the nation and foreign countries. A substantial number of students are employed. A large part of the student body has a primary interest in research and development; the remainder look toward careers in design or in administration of scientific and engineering activities.

The objective toward which the School strives is to stimulate and assist the student to develop to the limit of his capability; to acquire understanding of the principles and practices of engineering and applied science; to develop skill in the application of his knowledge to serve the needs of mankind; and to have a sense of responsibility to society and his profession.

UNDERGRADUATE STUDY

Undergraduate study in the School is education in preparation for a career in engineering or applied science, as it exists today and as it may develop in the future. It is intended to provide a solid foundation in the basic principles, concepts, and techniques underlying technology and applied science, on which the individual may build technical competence in a variety of areas as his professional career develops.

Study at the undergraduate level is the formal beginning of a life-long continuing program of education. It is the means through which the individual planning a career in engineering or in applied science acquires the basic information and skills, the attitudes, and the disciplines that form the foundation on which he will build his professional competence. Although the graduate is prepared when he receives his Bachelor's degree to engage in productive work in his chosen field, the undergraduate study he has completed is preparation for further development and progress rather than training for a job.

Professional development and progress require continuing study, either or both formal and informal, and continuing experience in the profession. If undergraduate study has provided a solid grounding in and thorough understanding of the basic knowledge underlying all of applied science and technology, the graduate may develop and progress in the specializations to which he is led by his interests and talents, or which may arise through technological advance in the course of his career.

The undergraduate program of the School provides the student the opportunity and means to acquire the solid grounding and thorough understanding required, in an environment that encourages and fosters the attitudes and disciplines essential to professional growth. Upon completion of the program the student is prepared for the next step in his professional growth, whether it be immediate entry into professional activity or continuing study at the graduate level.

The student beginning undergraduate study in engineering or applied science usually finds himself faced with educational demands quite different from those to which he has been accustomed. These demands are rigorous and their satisfaction requires effort, intellectual discipline, and maturity. Admission to the School indicates at least the minimum preparation and the probable capacity to meet the demands. However, neither the manner in which the student will react and respond to the demands made of him nor the most effective paths for him to follow in his development can be predicted. Therefore the School has designed its undergraduate program to provide a variety of experiences, through which the student may find his own best path to maturity and growth in his educational development.

In the fields of engineering and applied science there is no alternative to being able to demonstrate ability and competence by the correct solution of problems. Achievement in a particular course of study, while important, is less pertinent than the ability to analyze and interpret all the aspects of a problem, formulate solutions to the problem, and evaluate the solutions in the light of all available information. The undergraduate program is planned in recognition of the necessity for integration and correlation of courses of study and the evaluation and appraisal, from time to time, of the student's ability.

Engineers and applied scientists are involved with the conquest of nature for the benefit of mankind, as well as with the development and accumulation of knowledge.

They live and do their work in the real-life environment of the moment, and what they do for humanity is dictated in large part by the needs and desires of man for security and comfort. Thus they must have a strong sense of morality, a high concern for the progressive well-being of mankind, and an intimate knowledge of the realities of life. They cannot live and do their work in a scientific ivory tower. Therefore the School insists that the undergraduate include in his study courses in the humanities, to the extent necessary to develop a reasonable understanding and appreciation of these areas of knowledge. Cultivation in the intricacies of society and comprehension of human values are sought for the student, in complement to his scientific and technical literacy.

The School is a place for learning: for experiencing adventures of the mind and of the hands to the end of increased knowledge and understanding; for the formulation, exchange, and exploration of ideas. During his undergraduate years the student is led to strengthen his skills in analysis and his talent for creative activity, through frequent classroom and out-of-class discussions and by liberal use of project-type laboratory work. Independent thought and original ideas receive higher evaluation, in the appraisal of student achievements, than the rote recital of information.

THE CURRICULA

Undergraduate curricula of the School have a three-level form—the Introductory Level, the Intermediate Level, and the Advanced Level. Progression from one level to the next requires a certain number of semester hours of formal study and a satisfactory demonstration, through the medium of a comprehensive evaluation examination, of ability to use the knowledge gained through study and the intellectual powers developed.

BACHELOR OF SCIENCE CURRICULA

Introductory Level—70 semester hours (approximately)
(Intermediate Comprehensive Evaluation Examination)

Intermediate Level—35 semester hours (approximately)
(Advanced Comprehensive Evaluation Examination)

Advanced Level—35 semester hours (approximately)

A minimum total of 140 semester hours is required to qualify for the degree.

In general, study at the Introductory and Intermediate levels serves the purpose of acquisition and development of the broad base of information, skills, and attitudes on which the concentration of study at the Advanced Level will be founded. There is no formal specification of courses to be undertaken at the Introductory or Intermediate level; the concentration of study at the Advanced Level is specified and is related to a particular degree designation.

All undergraduate curricula lead to the degree of Bachelor of Science, with parenthetic designation of a particular area of concentration. For example: Bachelor of Science (Electronics); Bachelor of Science (Theoretical and Applied Mechanics); Bachelor of Science (Mechanical Engineering).

Degrees are offered in the following areas:

Civil Engineering	Engineering Science
Communications	Machine Computers
Control Systems	Measurement Science
Electrical Engineering	Mechanical Engineering
Electronics	Structures
Energy Conversion	Theoretical and Applied Mechanics

INTRODUCTORY LEVEL

The student entering the School with high school preparation starts his professional studies at the Introductory Level. His choice of courses is governed by his needs for preparation in the areas of knowledge included in the intermediate comprehensive evaluation examination and by his interests. There is no rigid specification of courses. The difference in semester hours between the number required for preparation and the approximate number required (70) is available to the student for elective study in any subjects he chooses.

Thus the student can choose the most effective (for him) of several paths to the Intermediate Level, can make full use of advanced placement opportunities, proceed at his own best pace, and have experiences to assist him in formulating his ultimate educational objective.

The student is required to obtain his faculty adviser's approval of his program each semester, prior to registration. For the guidance of the student and his faculty adviser, every beginning student must complete the School's placement examinations in English, Reading, Algebra, and Trigonometry. The student is required to undertake remedial work in any of these areas in which he is deficient as determined by the standards of the School, prior to enrollment in courses in the area of deficiency.

The areas included in the Intermediate comprehensive evaluation examination, see below, serve as a guide to students in arranging their programs of study. The content and level of the evaluation material are indicated by the context of the entire examination rather than by the statements under any one item. The examination measures the student's ability to integrate and use his knowledge as well as the extent and quality of his information.

The areas included in the examination are:

Analysis—including logic and method analysis

Communication—including correct use of English, spelling, composition, sketching, descriptive geometry, use of graphic aids, interpretation of drawings

Chemistry—introductory general chemistry

Mathematics—including analytic geometry, differential and integral calculus, ordinary and partial differential equations, finite series, complex variables, vector analysis, and finite mathematics

Physics—introductory general physics including molecular structure of matter and atomic physics

Statistics—principles and methods of statistics

Humanities—(the evaluation will require a critical essay in the area.)

The following curriculum illustrates one of several feasible combinations of courses that might be selected.

	First Semester	Semester Hours
Chem 13	General Chemistry	4
Math 27	Calculus I and II	6
Physics 15	General Physics	3
Elective		3

	Second Semester	Semester Hours
Ap S 4	Logic and Method in Analysis	3
Chem 14	General Chemistry	4
Math 28	Calculus III and IV	6
Elective		3

	Third Semester	Semester Hours
Ap S 5	Finite Mathematics and Statistics in Science I	3
Ap S 59	Introductory Analytical Mechanics I	5
Math 111	Mathematics for Engineers and Physicists I	3
or Math 139	Advanced Calculus I	6
Elective		

	Fourth Semester	Semester Hours
Ap S 6	Finite Mathematics and Statistics in Science II	3
Ap S 60	Introductory Analytical Mechanics II	5
Math 112	Mathematics for Engineers and Physicists II	3
or Math 140	Advanced Calculus II	3
Physics 16	General Physics	3
Elective		0
Intermediate Comprehensive Evaluation Examination		

The course requirements for entry into Intermediate Level may be satisfied in this School, Columbian College of Arts and Sciences, a junior college, or any other accredited institution of college level, and may consist of courses in any subjects acceptable for degree credit in the institution in which they are completed.

INTERMEDIATE LEVEL

A student wishing to enter the Intermediate Level presents approximately 70 hours of course work in any subjects and an Intermediate comprehensive evaluation examination. He is admitted to Intermediate Level study by favorable decision of the faculty group which appraises the student's qualifications to proceed with study, as shown by both his course record and the examination. A minimum of 60 hours of course work must be presented. The comprehensive evaluation examination must be taken in the School of Engineering and Applied Science.

The curriculum in the Intermediate Level is determined, as in the Introductory Level, by the student's needs in preparation for the Advanced comprehensive evaluation examination and by his interests. There is no specification of required courses.

At this level it is desirable for the student to anticipate, in his selections of courses, the area of concentration he intends to enter at the Advanced Level. While he continues to build foundation knowledge at this level, there is opportunity to expand the foundation in some areas in preparation for later concentration. The student is advised to plan his program at this level carefully, with the advice and assistance of his

faculty adviser. At this level the student bears the entire responsibility for his study program; faculty approval is not required, but the professional advice and counsel of the student's adviser are available on request.

The areas included in the Advanced comprehensive evaluation examination, see below, serve as a guide to the student in planning his program at the Intermediate Level. The content and level of the evaluation material are indicated by the context of the entire examination rather than by the statements under any one item. The examination measures the qualification of the student to proceed productively in a chosen area of concentration, and will include some material related specifically to particular areas of concentration.

The areas included in the examination are:

Analytical Mechanics—mechanics of rigid and deformable bodies, including soils and fluids

Field and Wave Theory—basic theory and analysis of fields (electric, magnetic, potential, vector, etc.) and of wave motion

Humanities—(the evaluation will require a substantial essay in a specific area)

Management Science—basic concepts and methods of management science, elementary operations research and analysis

Materials—structure of materials, behavior as related to structure, principles of control of material properties, quantum physics aspects

Metrology—standards, measurement principles, error, design of experiments, standard devices, and procedures in measurement

Network Theory—basic theory and analysis of networks and elements of network synthesis

Thermodynamics and Energy Conversion—Fundamental concepts and theory; electrical, mechanical, thermal, and chemical energy conversion systems

The following curriculum illustrates one of a number of combinations of courses that might be selected as a study program at the Intermediate Level (fifth and sixth semesters). The program shown anticipates later concentration in the area of Electrical Engineering.

	Fifth Semester	Semester Hours
Ap S 10	General Field Theory	3
Ap S 29	General Network Theory I	3
Ap S 101	Materials Science I	4
Ap S 105	Fundamentals of Measurement Science I	4

	Sixth Semester	Semester Hours
Ap S 11	General Wave Theory	3
Ap S 30	General Network Theory II	3
Ap S 102	Materials Science II	4
Ap S 106	Fundamentals of Measurement Science II	4
Advanced Comprehensive Evaluation Examination		0

ADVANCED LEVEL

A student wishing to enter the Advanced Level must present not less than 90 hours of course work in any subjects and an Advanced comprehensive evaluation examination. He is admitted to Advanced Level study by favorable decision of the faculty

group which appraises the student's qualifications to proceed with study in the area of concentration, as shown by both his course record and the examination.

Advanced Level study provides for concentration in a specific area of engineering or applied science. The curriculum (study program) is defined in detail and determines the parenthetic degree designation. Although the required courses are specified, reasonable variation from the specification is possible to accommodate particular interests and needs of the student, especially when these relate to newly developed or frontier areas.

In contrast to study at the lower levels, study at the Advanced Level has a strong component of design and application, to give the student experience in the creative work that is the distinguishing characteristic of engineering and applied science.

All curricula at the Advanced Level include approximately 30 hours of specified course work, and electives to complete the total of 140 semester hours required to qualify for degree consideration. The specified curricula at the Advanced Level follow.

CIVIL ENGINEERING

Civil engineering is the broad branch of engineering most closely related to daily human activities. Study in this area prepares for careers in the design of buildings, bridges, aircraft and missile frames, tunnels, and dams; the planning of cities; and for research on new types of structures, new materials, and new methods of construction.

The concentration of study outlined below provides the essentials for beginning a career upon graduation, for registration as a professional civil engineer as required by law, and for continuing study at the graduate level.

	REQUIRED COURSES	Semester Hours
Ap S 62	Soil Mechanics	3
Ap S 70	Earth Science	3
Ap S 121–22	Structural Theory I–II	8
Engr 1	Engineering Planning and Economics	3
Engr 2	Regional and Urban Planning	3
Engr 10	Hydraulic Engineering	6
Engr 11–12	Design of Structures I–II	

COMMUNICATIONS

Study in this area prepares for careers in telephone, radio, and wire communications; space and satellite communications; rocket control and guidance; high frequency communications such as microwaves; and other forms of communication using vacuum tubes, transistors, light amplifiers and similar devices. Communication theory and system design are emphasized. The graduate may choose to enter research and development in the design of new methods of communication or the design, construction, and operation of communications systems.

The study outlined below provides the essentials for beginning a career upon graduation and the base for further study at the graduate level.

	REQUIRED COURSES	Semester Hours
Ap S 32	Network Analysis	3
Ap S 50	Information Theory	3
Ap S 55	Control Theory	3
Ap S 58	Analysis Methods	3

		Semester Hours
Engr 19–20	**Engineering Electronics I–II**	6
Engr 101–2	Communications Laboratory	6
Engr 233	Microwaves	3
Engr 235	**Communication Systems**	3

CONTROL SYSTEMS

Control systems is a new, rapidly developing branch of technology which provides the technical means for automation and automatic control of devices, machinery, manufacturing processes, and a variety of tasks and operations. The study outlined is preparation for such activities as: design and construction of systems for space missile guidance and control, the control of nuclear reactors and atomic energy systems; automatic control of radar search devices; design of automatic fire control systems of military weapons; and the design and operation of electronic mechanisms for automatic control. The use of machine computers in control systems is emphasized.

The graduate is prepared to undertake analysis and design of control systems, to carry on research on automatic control, and to continue further study at the graduate level.

REQUIRED COURSES

		Semester Hours
Ap S 32	**Network Analysis**	3
Ap S 50	Information Theory	3
Ap S 55	Control Theory	3
Ap S 65–66	System Dynamics I–II	6
Ap S 67	Analytical Kinematics	3
Ap S 75	Digital Circuitry and Systems	3
Engr 22	Digital Techniques	3
Engr 103–4	**Control Laboratory I–II**	6

ELECTRICAL ENGINEERING

Electrical Engineering is one of the traditional broad branches of engineering, and is primarily concerned with the uses of electrical energy in various forms. The study outlined is preparation for such activities as: analysis and design of electric power generating plants, power transmission systems, and electrical appliances; the design and application of motors, generators, and transformers; the design of electrical instruments and their use in measurement; and the design of the electrical equipment of buildings, factories, ships, aircraft, missile and rocket test and launching sites.

The study outlined provides the essentials for beginning the practice of electrical engineering (including registration as a professional electrical engineer as required by law), for continuing graduate study in any of the many specialties of electrical engineering, and for undertaking research in electrical engineering. The concentration provides a broad insight into the most common areas of electrical engineering, preparation for immediate careers in this area, and a sound base for graduate study.

REQUIRED COURSES

		Semester Hours
Ap S 32	**Network Analysis**	3
Ap S 50	Information Theory	3
Ap S 55	Control Theory	3
Ap S 75	Digital Circuitry and Systems	3
Ap S 130	Electrical Energy Conversion	3
Engr 19–20	Engineering Electronics I–II	3
Engr 49–50	Precise Electrical Measurements I–II	6
Engr 105–6	Electrical Engineering Laboratory I–II	6

ELECTRONICS

Electronics involves the use and control of very small amounts of electrical energy to manipulate and operate devices designed to extend and complement human nerves and brains. The study outlined is preparation for such activities as: design and use of electronic instruments in radio, telephone, facsimile, and television systems, in devices to control industrial machinery, and in computers; the design and application of transistor and solid-state circuits; the design of radar and navigation devices and systems; and the application of electronics in other branches of science and in medicine.

The graduate is prepared to undertake design, to engage in research and development of new applications of electronics, and to continue in graduate study.

REQUIRED COURSES

		Semester Hours
Ap S 32	Network Analysis	3
Ap S 50	Information Theory	3
Ap S 55	Control Theory	3
Ap S 75	Digital Circuitry and Systems	6
Engr 19–20	Engineering Electronics I–II	6
Engr 49–50	Precise Electrical Measurements I–II	6
Engr 107–8	Electronics Laboratory I–II	3
Physics 116	Quantum and Solid State Physics	3

ENERGY CONVERSION

Energy conversion is concerned with the development and application of energy sources. The study outlined is preparation for such activities as: research on new energy sources (such as: fuel cells, biological processes, and solar batteries); development and design of energy sources employing thermionics, thermoelectricity, direct chemical conversion, photovoltaic processes, and biological processes; design and application of fuel cells, thermionic converters, electrical and eletromechanical machines.

Energy conversion is a new and rapidly growing area, offering unusual opportunity. The graduate will find most opportunity in research and development, and in application of new energy sources. The study program provides preparation for such careers and for continuing graduate study.

REQUIRED COURSES

		Semester Hours
Ap S 87	Heat Transfer Theory	3
Ap S 130	Electrical Energy Conversion	3
Ap S 284	Combustion Processes	3
Ap S 285	Reaction Kinetics	3
Engr 30	Applied Thermodynamics	6
Engr 31–32	Thermal Power I–II	3
Engr 35	Fluid Machinery	6
Engr 109–10	Energy Conversion Laboratory I–II	

ENGINEERING SCIENCE

Engineering science is a broad area of fundamental knowledge of engineering principles, concepts, and techniques underlying all of technology. The study outlined prepares for careers in research and development of new devices and techniques for use in scientific exploration of the oceans, space, the atmosphere, and the earth; the design and construction of devices for use in medical, biological, physical, and chem-

tcal research; the design and use of new materials, structures, and machines for control of nature; and research to improve engineering devices and methods.

The graduate of this program is most likely to engage in research and development or in graduate study through the doctoral level.

	REQUIRED COURSES	Semester Hours
Ap S 32	Network Analysis	3
Ap S 55	Control Theory	3
Ap S 58	Analysis Methods	3
Ap S 63	Fluid Dynamics	3
Ap S 64	Dynamics of Compressible Fluids	3
Ap S 65–66	System Dynamics I–II	6
Ap S 75	Digital Circuitry and Systems	3
Ap S 87	Heat Transfer Theory	3
Engr 52	Introductory Transducers and Instrumentation	3

MACHINE COMPUTERS

Machine computers are finding wide application in many scientific and engineering applications as well as in business and industry. Their greatest development and application are yet to come. The study outlined is preparation for such activities as mathematical (logic) and electronic design of computers; programming; coding; electronic design of circuits employing transistors and other solid state devices; design of computer logic; the use of computers in medicine; research in computer design and applications; development of computer solutions to management, business, and industrial problems; and the design of computers for use in control systems.

The graduate will find many opportunities in industry, business, research, and teaching. The study program provides preparation for these careers and a broad base for further specialization in graduate study.

	REQUIRED COURSES	Semester Hours
Ap S 50	Information Theory	3
Ap S 75	Digital Circuitry and Systems	3
Ap S 287	Automatic and Self-organizing Systems	3
Engr 19–20	Engineering Electronics I–II	6
Engr 22	Digital Techniques	3
Engr 23–24	Computer Laboratory I–II	6
Math 124	Introduction to Matrix Theory	3
Physics 116	Quantum and Solid State Physics	3

MEASUREMENT SCIENCE

Measurement science concerns the design, construction, and use of instruments in measurement, and the design of experiments. The study outline below is preparation for such activities as testing of rockets, missiles, and space vehicles; measurement of the characteristics and properties of materials; determination of standards of measurement in light, heat, optics, electricity, etc.; research in measurement methods and techniques in various fields of science and in medicine; design and construction of measuring instruments; design and execution of experiments and tests of various kinds; and control of quality of manufactured products.

The graduate will find many opportunities in space research, industry, manufacturing, and research. Opportunities are especially good in the design and application of instruments.

	REQUIRED COURSES	Semester Hours
Ap S 55	Control Theory	3
Engr 19–20	Engineering Electronics I–II	6
Engr 49–50	Precise Electrical Measurements I–II	6
Engr 52	Introductory Transducers and Instrumentation	3
Engr 53	Advanced Transducers and Instrumentation	3
Engr 54	Precise Mechanical Measurements	4
Engr 55	Precise Heat Measurements	4

MECHANICAL ENGINEERING

Mechanical engineering is the broad branch of engineering concerning machinery, equipment, and other power devices; particularly in manufacturing and industry. The study outlined below is preparation for such activities as design of power generating equipment and plants (viz: jet engines, gas turbines, steam boilers, etc.); design and construction of aircraft, missiles, automobiles, and ships; manufacture of machines and goods; design of mechanical equipment (heating, air-conditioning, automatic machinery, nuclear reactor controls) and research to develop new kinds of power machinery.

The graduate will find many opportunities in manufacturing, in design, and in research. The preparation is adequate for beginning the practice of mechanical engineering, and provides the essential knowledge needed in registration as required by law for practice as a professional mechanical engineer.

Careers in research in mechanical engineering should include additional study at the graduate level.

	REQUIRED COURSES	Semester Hours
Ap S 55	Control Theory	3
Ap S 64	Dynamics of Compressible Fluids	3
Ap S 67	Analytical Kinematics	3
Ap S 87	Heat Transfer Theory	3
Engr 30	Applied Thermodynamics	6
Engr 31–32	Thermal Power I–II	3
Engr 35	Fluid Machinery	6
Engr 111–12	Mechanical Engineering Laboratory I–II	3

STRUCTURES

The structures expert is concerned with the design of structures and their foundations; their behavior under the forces of earthquakes, wind, and the loads they carry. The study outlined is preparation for such activities as design of skyscrapers, tunnels, dams, missile silos and launching sites, powerhouses, bridges, and aircraft frames; the development of new types of structures (such as, satellite communication antennas); the use of new materials in structures; analysis of structure behavior in earthquakes; and research on structural design.

The graduate will engage chiefly in design or in research. There are many opportunities in both fields.

The study program provides the essential knowledge for registration required by law to practice as a professional structural engineer, for engaging in research, and for further specialization in graduate study.

	REQUIRED COURSES	Semester Hours
Ap S 62	Soil Mechanics	3
Ap S 121–22	Structural Theory I–II	6
Engr 1	Engineering Planning and Economics	3

		Semester Hours
Engr 11–12	Design of Structures I–II	6
Engr 13–14	Structural Design Laboratory I–II	6
Engr 15	Structural Dynamics	3
Engr 212	Concepts of Structural Design	3

THEORETICAL AND APPLIED MECHANICS

Theoretical and applied mechanics is concerned with the behavior of matter when subjected to forces. The study outlined is preparation for such activities as: prediction and measurement of blast effects of bombs on buildings; analysis of behavior of vehicles re-entering the atmosphere; development of theory defining behavior of materials; mathematical analysis; study of behavior of fluids; and applications of mechanics to celestial and space bodies.

The graduate will find most opportunity in research, particularly in regard to machines and structures; and should plan further study at the graduate level.

REQUIRED COURSES

		Semester Hours
Ap S 64	Dynamics of Compressible Fluids	3
Ap S 65–66	System Dynamics I–II	6
Ap S 68	Deformable Body Mechanics	3
Ap S 198	Mechanics Research	3
Ap S 217	Analytical Mechanics	3
Ap S 219	Mechanics of Continua	3
Math 142	Theory of Differential Equations	3
Physics 113	Atomic Physics	3
Physics 118	Introduction to Solid State Physics	3

ADMISSION

UNDERGRADUATE STUDY

THE PURPOSE OF ADMISSION

As a private nonsectarian professional school it is the purpose of the School to admit for study those persons who can benefit themselves and society by disciplined intellectual effort in its environment. The School has a responsibility to admit those whose prospect for successful and rewarding achievement justifies the opportunity to study and whose objectives can be satisfied with the resources the School offers. The School admits as many students meeting these criteria as its resources permit.

Admission requirements are stated in terms of the minimum qualifications establishing a favorable prospect for successful completion of the curricula. In fairness to those presenting a lower level of qualification the School may deny admission when, in the judgment of the School, the prospect for success of the student is questionable.

Admission to the School of Engineering and Applied Science is the first selective step of a long series of qualifying tests the student will take in progression toward professional competence and status.

PROCEDURE

An applicant for admission obtains from the Office of the Director of Admissions of the University an application blank which he must fill out completely and return with **the $15 application fee. A recent photograph, with signature, of the applicant must be attached to the blank.**

Applications should be filed not later than July 1 for the fall semester, December 1 for the spring semester, and May 1 for the Summer Sessions. Late applications will be considered only if the application form and all required credentials are received in the Admissions Office no later than September 1 for the fall semester, January 10 for the spring semester, and June 1 for the Summer Sessions.

An applicant from a secondary school sends the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it directly to the Office of the Director of Admissions.

The prospective student from a secondary school requests the College Entrance Examination Board to send to the Office of the Director of Admissions the scores of all College Entrance Examination Board Scholastic Aptitude tests and Achievement tests taken. Arrangement for tests is the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, not less than one month before the date of the test. On the application for the test the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington 6, D. C.

A prospective student who has previously attended one or more institutions of higher learning must request **each registrar to mail directly to the Office of the Director of Admissions a transcript of his record, even though credits were not earned.**

READMISSION

A student previously registered in the University who was not registered on campus during the immediately preceding semester must apply for readmission in the Office of Admissions (time stated above) in advance of registration. If the student applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended before his application will be considered. Applications for readmission are considered on the basis of regulations currently effective.

CRITERIA FOR ADMISSION

The applicant for undergraduate admission must be of good character and must have had academic background appropriate for the program of studies contemplated.

Consideration for admission is based upon the combined evidence of the following factors:

1. An acceptable certificate of graduation from an accredited high school showing at least fifteen "units"*;

2. The principal's statement that the applicant is prepared to undertake college work;

3. Scores on the following College Entrance Examination Board tests: the Scholastic Aptitude Test, the English Composition Achievement Test, and a Mathemat-

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

Achievement Test. If the applicant studied trigonometry in high school he should take the Advanced Mathematics Achievement Test; if he did not study trigonometry in high school he should take the Intermediate Mathematics Achievement Test.

The qualifications of applicants who, because of unusual circumstances, do not meet the above requirements will be considered by the School, which may prescribe admission tests.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. General science may not be counted in satisfaction of the science requirement but may be counted as an elective unit.

It is recommended that *both* physics and chemistry be studied in high school. Study of these sciences contributes to the student's general education, aids in his choice of a career, and affords a qualitative measure of his ability and potential for study of engineering or science. Superior students are encouraged to begin collegiate study at the highest level consistent with their preparation, by the use of waiver examinations.

The study of solid geometry is recommended, in order that the student may have a firm foundation for his collegiate studies in mathematics.

Quantitative Deficiency.—A graduate of an approved high school who does not offer for admission the particular subjects required, but who does present not less than fifteen acceptable units, may be admitted to pursue a prescribed program of studies including courses to make up for deficiencies if the deficiency in distribution does not exceed two units.

ADVANCED STANDING

Credit for Advanced Placement Examinations

Advanced standing may be granted for study at the collegiate level in advanced courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced College Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the course of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

Total credit that may be so granted is ordinarily limited to 15 semester hours, not more than 6 semester hours of which may be in any one examination area. In exceptional cases these limits may be exceeded, but in no case will the credit granted exceed 30 semester hours.

Credit from Higher Institutions

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University, and subject to the

general University regulations concerning satisfactory subsequent work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

Service School Credits

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates in the School of Engineering and Applied Science. Veterans should submit to the Director of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

GRADUATE STUDY

Graduate study is rapidly becoming a necessity for the engineer or applied scientist. Tomorrow's leaders are developing today the increased knowledge and capability demanded by the accelerating pace of advance in engineering, science, and administration. Industry eagerly seeks persons possessing advanced knowledge, analytical skill, and certain ability.

For those looking to a future as leaders, the School of Engineering and Applied Science offers graduate study leading to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The program of study is centered on the individual and his development, in accordance with his preparation and needs. It includes study in the individual's area of major interest supported by study in related fields. Increased knowledge and understanding are sought by concentration on principles and their application rather than by encyclopedic coverage of techniques and specialized detail.

Graduate study may be undertaken in any field of engineering or applied science in which a scientific discipline exists and in which the School has adequate facilities and resources.

THE DEGREE OF MASTER OF SCIENCE

The objective of this discipline is a substantial comprehension of principles and methods for their use, as applied in modern technology. Increased understanding and its use in solving engineering problems are sought, rather than a breadth of familiarity with applications and techniques.

A program of study, consisting of at least 24 semester hours of graduate courses to prepare the candidate for his comprehensive examination, and a written Master's thesis (6 semester hours) is formulated, with particular attention to the individual student's needs and objectives. The program may provide for broad coverage in a variety of fields or may be designed to give some degree of specialization in a particular area, as determined by conference at the time of admission to candidacy.

The level of the courses ordinarily requires as prerequisite the satisfactory completion of at least one undergraduate course in mathematics beyond the first course in ordinary differential equations and at least one in the area of the graduate course to be undertaken.

ADMISSION TO GRADUATE STUDY

Admission to graduate study requires a Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected.

Applicants who have significant deficiencies in their preparation may qualify for admission to graduate study by taking prescribed undergraduate courses. In some cases such study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree. Admission to graduate study does not admit the student to degree candidacy.

ADMISSION TO DEGREE CANDIDACY

Application for admission to candidacy for the degree of Master of Science must be made in writing to the Dean. To be accepted the applicant must have (1) been

accepted for graduate study, (2) satisfactorily completed 9 semester hours of graduate courses, and (3) give evidence of satisfactory personal and intellectual qualifications. In exceptional cases the requirement of 9 semester hours of graduate courses may be reduced.

ADVANCED STANDING

Graduate courses completed before admission to graduate study are not transferable for degree credit. They may, however, be considered in planning individual programs. Course work to satisfy degree requirements in another school or college of the University may not be applied toward a degree in the School of Engineering and Applied Science.

REQUIREMENTS FOR THE DEGREE

The basic requirement for the degree is the satisfactory completion of the comprehensive examination.

Residence

The candidate must complete a minimum of one year of full-time study, or the equivalent in part-time study, in the School. A full-time student must complete all requirements for the degree within three years; a part-time student, within five years.

Scholarship

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further in the School until he demonstrates by examination, or as may be directed, that his deficiencies in course work have been removed. A minimum grade of *B* or better is required for undergraduate courses taken to remove deficiencies in preparation for graduate study.

Master's Thesis

The degree candidate must submit an acceptable thesis to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, and to furnish objective evidence of constructive power in a given field. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

Comprehensive Examination

To demonstrate substantial understanding of principles and methods of their use in the area of his interest, the student must pass a comprehensive examination, written, oral, or both as prescribed by the Faculty. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted an acceptable Master's thesis.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

The objective of this discipline is to develop an understanding of the principles and a competence in the practices of administration as applied to engineering and

scientific activities. Knowledge and understanding are sought rather than mere familiarity with techniques.

A study program is prescribed for each candidate; programs are integrated sequences of courses. This program is for engineers and scientists who have or anticipate responsibility for administration of engineering or scientific activities. Analysis, case study, and quantitative approaches are emphasized in addition to the technical theories of administration.

PREREQUISITE TO ADMISSION TO GRADUATE STUDY

In addition to the requirements for admission to graduate study stated below, the applicant must have an adequate knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement can be met by the successful completion of the following undergraduate courses or an approved equivalent: Psychology 145 *Principles of Human Relations*, Accounting 115 *Survey of Accounting*, and Statistics 107 *Statistics for Engineers*.

ADMISSION TO GRADUATE STUDY

The applicant must have adequate preparation for advanced study, including a satisfactory Bachelor's degree, together with acceptable personal qualities. The applicant must have capabilities and interests beyond the ability to assimilate organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation are necessary to the successful applicant. Admission to graduate study does not admit the student to degree candidacy.

ADMISSION TO DEGREE CANDIDACY

Application for admission to degree candidacy must be made in writing to the Dean. To be accepted the applicant must: (1) have completed satisfactorily all prescribed prerequisite study; (2) have satisfactorily completed graduate courses EA 201 and EA 202 *Engineering Administration I and II* and EA 271 *Operations Research;* and (3) give evidence of satisfactory personal and intellectual qualifications.

ADVANCED STANDING

Graduate courses completed before admission to graduate study are not transferable for degree credit. They may, however, be considered in planning individual programs. Course work to satisfy degree requirements in another School of the University may not be so applied in the School of Engineering and Applied Science.

REQUIREMENTS FOR THE DEGREE

The basic requirement for the degree is the satisfactory completion of the comprehensive examination.

Residence

The candidate must complete a minimum of one year of full-time study, or the equivalent in part-time study, in the School. A full-time student must complete all requirements for the degree within three years; a part-time student within five years.

Scholarship

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further

in the School until he demonstrates by examination, or as may be directed, that his deficiencies in course work have been removed. A grade of *B* or better is required for undergraduate courses taken to remove deficiencies in preparation for graduate study.

Master's Thesis

The degree candidate must submit an acceptable thesis to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, and to furnish objective evidence of constructive power in a given field. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

Comprehensive Examination

To demonstrate substantial understanding of principles and methods of their use in the area of his interest, the student must pass a comprehensive examination, written, oral, or both, as prescribed by the Faculty. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted an acceptable Master's thesis.

THE DOCTORAL PROGRAM

The School of Engineering and Applied Science offers a program of advanced study and research leading to the degree of Doctor of Science. This program is limited to recognized fields in engineering or applied science in which a scientific discipline exists and for which the University has adequate resources.

The Doctoral discipline is designed to prepare the student for a career of creative scholarship by providing a broad background of knowledge and an understanding of research methods. It requires study of interrelated fields of learning as well as original research in the field of central interest.

The discipline for the degree is divided into two stages. The first—made up of a study of interrelated fields of learning which support the general area of research concentration—culminates in the qualifying examination. The second—composed of research investigation of a particular subject in a special field and the presentation of such research findings in a written dissertation—culminates in the final examination.

Detailed information on the program is provided in a separate publication obtainable on request.

ADMISSION

The applicant must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. The applicant must have capabilities and interests beyond the ability to assimilate organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation or experiment are necessary to the successful applicant.

LANGUAGE REQUIREMENTS

A reading knowledge is required of two foreign languages important in the student's field of interest. One language examination must be passed before admission to graduate study. The second must be passed before admission to the qualifying examination and within one year of the start of study for the qualifying examination.

APPLICATION FOR ADMISSION

Well in advance of the opening of the semester for which the student seeks admission, he must have a personal interview with the Dean or the professor under whom he wishes to study, to discuss the field of study, the University's facilities for guidance in this field, the applicant's qualifications, and the possibilities of an effective doctoral program. If an application for admission is indicated, the student will be advised concerning the details of application procedure, and his application will be referred for admission decision to a committee on admissions appointed to consider his qualifications.

STUDY FOR QUALIFYING EXAMINATION

Upon admission to study for the qualifying examination the student's admission committee becomes his Consultative Committee, which prescribes and directs his studies. The Committee assigns to him a group of fields of learning deemed necessary to insure his breadth of knowledge, as well as to support research in his central field. Members of the Committee advise the student concerning the scope and content of these fields of study and guide him in preparation for his examination in them.

The purpose of the qualifying examination is to ascertain that the student's breadth of background and intellectual development are adequate to support doctoral research and investigation in his central field. The qualifying examination is both written and oral and usually extends over a period of six days. It is given by a special committee consisting of members of the student's Consultative Committee and other specialists. Upon favorable report of the examiners to the Dean the student is admitted to candidacy for the degree, to pursue his specialized study and research under the supervision of a designated member of the Faculty.

The examination is the sole test of the student's ability to qualify for admission as a candidate for the degree, and to enter the second stage of his doctoral discipline.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

The student admitted to candidacy for the degree requests as Master in Research the member of the Faculty under whom he wishes to pursue research and specialized study. The Faculty member may accept or reject such request. The research is arranged by the Master and approved by the Dean. Throughout the remainder of the doctoral program, the candidate is responsible solely to his Master in his research and in the presentation of his dissertation.

The Dissertation

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

The dissertation must be presented in its final form to the Dean of the School no later than the date specified in the calendar. Three complete copies are required. It is the responsibility of the candidate to obtain from his dean a printed copy of the regulations governing the styling and reproduction of dissertations, which are rigidly enforced.

Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

The summaries of accepted dissertations are printed in a numbered issue of the

University Bulletin. The successful candidate is required before receiving his degree to pay a fee to cover the expense of printing of the summary of his dissertation.

The Final Examination

Upon approval of the dissertation by the Master, the candidate is presented for his final examination.

The final examination is oral and is open to the public. The candidate must demonstrate a mastery of his special field of interest and of the materials and techniques used in the research. The committee of examiners includes members of the Faculty competent in the research field or in closely related subjects and may also include qualified experts brought to the University especially to participate in the examination. If the candidate satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Faculty recommends him for the degree of Doctor of Science.

RESIDENT AND CONTINUOUS STUDY

All of the work for the degree must be done in residence (on the campus), except in certain circumstances when the student may be permitted to undertake a portion of the research problem in an approved off-campus facility. The student must maintain continuous registration in the School, even when granted a leave of absence. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student, and he must apply for readmission to graduate study under whatever new conditions and regulations are set up by his consultative committee.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the qualifying examination or as a candidate engaged in doctoral research. The qualifying examination, however, must be completed within five years of the date of admission, and the entire degree program must be completed within seven years. After admission the student may apply for his qualifying examination whenever his consultative committee believes that he is prepared to take it; his research and specialized study may be undertaken with whatever concentration of time meets the approval of his research adviser. Normally a minimum of two years of full-time study and research is spent in meeting the requirement for the degree.

THE CENTER FOR MEASUREMENT SCIENCE

The Center, under the direction of the School of Engineering and Applied Sciences, is a cooperative activity of the University, industry, and government providing education, research, and service programs related to measurement. It was established by the University in 1960.

The principal, but not exclusive, activities of the Center are:

The education of persons for careers in measurement science;

The development and improvement of measurement, standardization, and calibration techniques, apparatus, and data—with particular reference to high precision.

The provision of staff and facilities to industry for research and consultation on measurement problems in industry, including the maintenance of primary standards of measurement directly traceable to the national standards.

The publication of results of research, manuals of practice and procedures, and information related to measurement science.

The Center maintains relations with industry and government through its Associate Program, in which interested individuals, companies, or other organizations may participate. The mutual communication, collaboration, and support made possible by this program bring vitality to the Center activities and insure attention to the needs of industry and government.

Through these and other activities the Center serves as a source of personnel competent in measurement science, as an instrument for collaborative research on measurement problems, and as a service organization providing expert capability to industrial and government organizations in the solution of their measurement problems.

THE EDUCATION PROGRAM

The Education Program of the Center consists in part of curricula offered by the School, which prepare the student to assume responsibilities in the field of measurement science. The curricula are integrated, to permit a student to terminate his formal education at any level, or to proceed to the next level. Programs lead to the Engineering Technologist Certificate and the degrees of Bachelor of Science, Master of Science, and Doctor of Science.

In addition to the certificate and degree programs, the education program includes seminars, special conferences, and short courses offered from time to time.

Engineering Technologist Certificate

This is a two-year program open to high school graduates who meet the requirements for admission stated on pages 22 and 23.

Curriculum

First Year

		Semester Hours
Ap S 3	Graphical Communication	3
Ap S 4	Logic and Method in Analysis	3
Ap S 5–6	Finite Mathematics and Statistics	6
Chem 13–14	General Chemistry	8
Math 27, 28	Calculus I–II, III–IV	12
Physics 15	General Physics	3
	Total	35

Second Year

		Semester Hours
Ap S 10	General Field Theory	3
Ap S 11	General Wave Theory	3
Ap S 52	Introductory Transducers and Instrumentation	3
Ap S 59–60	Introductory Analytical Mechanics I–II	10
Ap S 105–6	Fundamentals of Measurement Science I–II	8
Math 111	Mathematics for Engineers and Physicists I	3
Physics 16	General Physics	3
Elective		3
	Total	36

THE RESEARCH PROGRAM

The research program of the Center includes all aspects of research and development related to measurement science. Research and/or development may be undertaken as independent studies by staff members for the Center, as studies for a sponsor under contract, or by personnel of Associates of the Center assigned to the Center to undertake the specific work. Associates receive publications of the Center; certain publications may be restricted in distribution.

THE SERVICE PROGRAM

The Center, arranges for consultation and assistance of the Faculty and Staff and the use of the facilities of the Center in connection with specific problems in measurement. The program is restricted to the use of the Associates of the Center.

The Service Program also makes it possible for Associates to engage the various resources of the University, through the Center, as may be desirable and feasible, in solution of their problems in measurement.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted.

Tuition Fees

School of Engineering and Applied Science:

Undergraduate study:	
Full-time program (15 hours or more), each semester	$550.00
Part-time program, each semester hour	38.50
Master's study, including comprehensive examination*	1,000.00
Doctor of Science:	
For work leading to and including the qualifying examination	1,200.00
For work leading to and including the final examination	1,200.00
For courses offered by Columbian College of Arts and Sciences; the School of Government, Business, and International Affairs; or the Division of Air Science	33.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

Engineering Technologist Certificate	10.00
Bachelor's, Master's, Doctor's degrees	25.00
Fee for Binding Master's Thesis	6.00
Fee for Printing Summary of Doctoral Dissertation	85.00

Special Fees

Application fee (degree candidate), nonrefundable	15.00
Application for room reservation fee (see page 39)	100.00
Admission tests (when required)	6.00–12.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree at the time of registration for the final semester of study (excluding summer sessions)	10.00
Late registration fee, for failure to register within designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit or vice versa), and change in credit hours for the course	2.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee†, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements. Due and payable on the official days of registration. (See also * footnote)	38.50

* Any student admitted to Master's study may elect to pay the total fee at the beginning of his program or on a course-by-course basis at $38.50 a semester hour until the total fee is paid.
Students completing payment of the total fee before completion of the required work (including theses and comprehensive examination) will be granted registration on an "in residence—no charge" basis for one semester immediately following the semester in which tuition payment is completed.
Students requiring additional time for completion of required work after completion of payment of the total fee and the expiration of a semester "in residence—no charge" must register "in residence" each semester and pay the normal "in residence" fee.

† Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

Engineers' Council fee, charged each student in the School of Engineering for each semester or any part thereof except the summer term	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
English test for foreign students (when required)	5.00
Laboratory checkout fee, for failure to check out of Chemistry laboratory by the date deadline set by the instructor	3.00
Transcript fee, for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees are due and payable in advance at the time of each registration.

With the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day* in November; one-third on the first working day* in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day* in March; one-third on the first working day* in April.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

A student who fails to meet payments when due, but pays his fees within the following two weeks of the date on which payment is due, is charged a $2 service fee. A student who fails to meet payments within these two weeks after payment is due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a $5 reinstatement fee.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice (see "Withdrawal", page 43).

* The University work week is Monday through Friday, inclusive.

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will a refund be made of the first third of the total tuition charges. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry or pharmacy who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a $3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

* The University work week is Monday through Friday, inclusive.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS AND ASSISTANTSHIPS

The following fellowships, graduate scholarships, and assistantships are available. Unless otherwise specified, applications should be submitted not later than March 1 preceding the period for which the award is to be made. They should be directed to the Dean of the School and addressed to The George Washington University, Washington 6, D. C.

University Teaching Fellowships.—Assigned for the academic year. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to $2,000 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed $500. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments. Application should be made to the Dean.

Graduate Teaching Assistantships.—Open to candidates for the Master's degree. Each graduate teaching assistant renders a designated unit of service, and receives, depending upon his teaching or laboratory assignment, up to $2,000 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed $600. Application should be made to the Dean.

National Science Foundation Cooperative Graduate Fellowships.—Fellowships at $2,200 for twelve months or $1,600 for nine months, with tuition waived, are available in the mathematical, physical, medical, biological, and engineering sciences and in certain other fields regarded as employing scientific methods. Application should be made to the Graduate Council not later than November 1 for the following year.

SCHOLARSHIPS AND PRIZES

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work (fifteen semester hours or in the professional schools, the full prescribed schedule) during the period for which the scholarship is awarded.

Scholarship application should be made in writing on or before April first for the following academic year and, unless otherwise specified, should be addressed to the Chairman of the Committee on Scholarships. Awards are made during the month of April. All scholarships begin with the fall semester.

The following scholarships and prizes are limited to students in the School of Engineering and Applied Science. The University offers many others which are open to engineering students. A special bulletin containing a complete list and full information concerning teaching fellowships, scholarships, and prizes, may be obtained from the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

*Association of Federal Communications Consulting Engineers Scholarship (1958).** —A full-tuition scholarship, including laboratory fees and books. Available to a student of good character, promise, and leadership working toward the degree of Bachelor of Science (Electrical Engineering) and intending to major in communications.

Frederick Albert and Alma Hand Britten Scholarships (1959).—Bequest of Alma Hand Britten for scholarship aid to needy students preparing for the engineering profession. Application must be made not later than March 1 on forms which are available at the Office of the Dean of the School of Engineering and Applied Science.

Henry Harding Carter Scholarship (1896).—A $500 scholarship established by Maria M. Carter in memory of her husband to aid a deserving student who is preparing for the civil engineering profession.

School of Engineering and Applied Science Scholarships.—Four scholarships are awarded each year to graduates of accredited high schools. Each scholarship provides full tuition for four academic years (excluding summer work and special fees), provided the student maintains an average of *B* and a satisfactory standard of deportment.

Applications must be made before March 1 for the following academic year. Application forms are available in the Office of the Dean of the School of Engineering and Applied Science.

Henry Parsons Erwin Scholarship (1955).—Established by Helen B. Erwin as a memorial to her husband, a former Trustee of the University. A partial scholarship for a student in Engineering or Applied Science.

Norman B. Ames Memorial Award.—Established by many friends of Professor Ames and awarded annually to a graduating senior of the School of Engineering and Applied Science who is nominated by his fellow students as having made significant contributions to the students in the School of Engineering and Applied Science and to the School and University

Martin Mahler Prize in Materials Testing.—A one-year membership in the American Society for Testing Materials awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

School of Engineering and Applied Science Distinguished Scholar.—A certificate awarded annually by the Faculty of the School of Engineering and Applied Science to the senior who graduates with the highest scholastic standing. The student's name is engraved on a plaque displayed in Tompkins Hall.

Sigma Tau Prize.—A medal awarded annually by the XI Chapter to the freshman in the School of Engineering and Applied Science who maintains the highest scholastic standing in the work of the entire year.

Theta Tau Activities Plaque.—A plaque awarded annually by Gamma Beta Chapter to the senior in the School of Engineering and Applied Science with the most outstanding record in activities for the entire period of his attendance.

* This scholarship is renewable and is, therefore, not available each year for award to an incoming freshman.

FINANCIAL AID

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Students should direct inquiries to and file applications with the Dean.

University Loan Fund.—The Trustees of the University have made available a fund for short-term loans to students to provide for partial payment of tuition. Application should be made three days prior to the dates on which tuition installments are due.

National Defense Student Loan Fund.—This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given applicants who express a wish to teach in elementary or secondary schools and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Treasurer no later than (1) for the *fall semester*—June first for students currently registered in the University and July first for entering students; (2) for the *spring semester*—December first; (3) for the *Summer Sessions*—May first.

John Brewster Willis, Jr., Loan Fund in Mechanical Engineering.—A fund of $1,000, established by Mrs. William L. Lane as a memorial to her nephew, John Brewster Willis, Jr., is available to Mechanical Engineering students (graduate or undergraduate) who are primarily interested in aeronautics.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

ADVISORY SYSTEM

The School of Engineering and Applied Science encourages a close Faculty-student relationship. Every entering undergraduate student is assigned a permanent Faculty adviser to assist him to orient himself in the professional discipline. Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. The adviser represents the student in all cases requiring Faculty action.

Students who have not satisfactorily completed 70 semester hours must obtain their advisers' approval of programs of study prior to registration.

Until a student has completed the work of the freshman and sophomore years he must follow the recommendations of his adviser in all academic matters. However, an adviser may not deny a student entry into any course or activity to which he is entitled under the regulations of the School. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

LIVING ACCOMMODATIONS

The University maintains seven attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semesters or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Director of Activities for Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1962–63 are as follows:

	Academic Year	
Residence Halls for Men	*Double*	*Triple*
John Quincy Adams Hall	——	$345
John C. Calhoun Hall	$380	——
James C. Welling Hall (Limited space available)	300	——
Residence Halls for Women	*Single*	*Double*
William H. Crawford Hall	——	$405
Hancock Hall	$535	405
Dolly Madison Hall	——	405
Hattie M. Strong Hall	470	405

Forms for applications, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW., or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

REGISTRATION

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions.

A student previously registered in the University who was not registered on-campus during the immediately preceding semester, must apply for readmission in the Office of Admissions in advance of registration.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in the School of Engineering and Applied Science and in another institution or another division of this University without the prior permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Dean's Council.

Registration in the School of Engineering and Applied Science entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

For the dates and hours of registration, see the calendar, page 7.

REGULATIONS

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absense.

A student suspended for any cause may not attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations

which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

AMOUNT OF WORK

A full-time undergraduate student who is not on probation may take no more than 20 semester hours. A student employed more than 24 hours a week who is not on probation may take no more than 10 semester hours.

A student previously unemployed who accepts employment after registration must immediately report that fact to the Dean so that his schedule may be adjusted if necessary.

SCHOLARSHIP REQUIREMENTS

A student must maintain a quality-point index of at least 2.00 to be in good academic standing.

A student who fails to maintain the scholarship requirements of the School of Engineering and Applied Science may be suspended from the School.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the Dean.

Graduate.—For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete).

THE QUALITY-POINT INDEX

Undergraduate.—Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

In order to graduate, a student must have a quality-point index of at least 2.00

in all work taken at this University and accepted in the School of Engineering and Applied Science.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors report to the Dean the names of students whose scholarship is unsatisfactory. On receipt of a warning notice the student must consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

Probation.—A student whose quality-point index falls below 2.00 is placed on probation. This probation extends over the period in which the student attempts 12 semester hours of study.

A student on probation may be required to follow a program of study including remedial studies as prescribed. He may not hold office, participate in the activities of any student organization, or represent the School in any student activity.

Suspension.—A student whose quality-point index is below 2.00 at the end of his probationary period is suspended. A student whose index falls below 2.00 after removal from probation is suspended.

At the time of his suspension a student may apply to the Dean's Council for guidance concerning remedial action he should take during the period of his suspension.

A student suspended for poor scholarship may apply to be readmitted in the semester or summer session which begins next after an interval of one calendar year. To be considered for readmission he must pass prescribed tests. A student readmitted after suspension is on probation. He must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

HONORS LIST

The Faculty of the School of Engineering and Applied Science recognizes meritorious scholastic achievement by an Honors List, containing in alphabetical order the names of candidates for undergraduate degrees whose scholastic achievement satisfies all of the following requirements:

1. The candidate's cumulative quality-point index is equal to or exceeds 3.00.

2. At least 30 semester hours of credit have been earned while a degree candidate in the School of Engineering and Applied Science.
3. At least 15 (part-time student) or 30 (full-time student) semester hours of credit in a degree curriculum have been earned in the two semesters immediately preceding the award.
4. No grade below *C* has been received during the qualifying period stated above.
5. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters and displayed in an appropriate public place in the School of Engineering and Applied Science. A notation is made on the student's record each time his name is included in an Honors List.

WITHDRAWALS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean of the School. Notification to an instructor is not an acceptable notice.

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean of the School. Permission to withdraw from the University will not be granted a student who does not have a clear financial record.

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

CHANGES IN PROGRAM OF STUDIES

After the registration period a student may not make any changes in his registration without the approval of the Dean. Requests for changes in registration must be made on forms provided in the Office of the Dean.

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

Withdrawal from any course without academic penalty after the fourteenth day following the first day of classes of a semester may be granted by the Dean under the following conditions: (1) exceptional circumstances make the request necessary; (2) the request is submitted on the official form for late withdrawals; (3) as of the date of request, the grades in all courses involved are *C* or better.

In the exceptional circumstances mentioned above the Dean may authorize withdrawal without academic penalty. In all cases financial regulations governing withdrawals remain in full effect.

A graduate student may withdraw from a graduate course without academic penalty only within the first four weeks of a semester.

* The University work week is Monday through Friday, inclusive.

CREDIT

Credit toward a degree is given only after registration for and satisfactory completion of the required work of classes or upon the granting of advanced standing in accordance with the regulations of the School. A student who takes a course as an auditor may not take the same course later for credit.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. No charge is made for the first copy; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a person who does not have a clear financial record.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution and transfer credits so earned toward graduation from this University must first secure the written approval of the Dean. Transferred credits will not be recognized in excess of those which might be earned in a similar period in this institution.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirement of the School, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the certificate or degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a certificate or degree must be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

No applications will be accepted after the date stated in the calendar. Students expecting to complete, during the Summer Sessions, requirements for the degrees to be formally conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Curriculum.—Curriculum requirements for the Engineering Technologist Certificate are stated on page 32; for the Bachelor's degrees, on pages 16–21; for the Master's degrees, on pages 25–28.

Graduate Record Examination.—All candidates for Bachelor's degrees must take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 14, 1963), for seniors graduating in February, and

the Spring Session (April 11, 1964), for those graduating in June. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior required to take the Graduate Record Examination must register for it in the Office of the Dean when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

Students receive individual reports of test scores and may avail themselves of the transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

Residence.—For the Engineering Technologist Certificate, a minimum of 30 weeks and the last 36 semester hours must be completed in residence.

For the Bachelor's degrees, a minimum of 30 weeks and 36 semester hours must be completed in residence. Summer work may be counted. Unless special permission is granted by the Dean to study elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the degree for which he is registered.

In Residence Status.—A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his readmission unless during his absence he maintains "in residence" status by paying the appropriate fee, see page 33. For the purpose of this regulation the summer term will be disregarded.

The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

If a candidate for the degree of Doctor of Science fails to maintain his residence during a period of absence, he must reapply for admission to study under whatever new conditions and regulations are set up by his consultative committee.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Dissertation.—A thesis or dissertation submitted in partial satisfaction of requirements for a Master's or Doctor's degree, respectively, must be presented in its final form to the Dean no later than the date specified in the calendar. Three complete copies are required. It is the responsibility of the candidate for a graduate degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the thesis or dissertation, which are rigidly enforced.

Accepted theses and dissertations with accompanying drawings become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in a thesis or dissertation must be secured from the Dean.

Graduation in absentia.—Application for graduation *in absentia* must be submitted to the Dean.

HONORS

With distinction.—A Bachelor's degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—A Bachelor's degree may be conferred with "Special honors", at the discretion of the Faculty, for outstanding achievement in the student's major field of work on recommendation of the Faculty, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

HOURS

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

STUDENT SERVICES AND ACTIVITIES

HEALTH ADMINISTRATION

The Health Administration Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Administration, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education; (2) three visits in any one illness by a member of the Health Administration Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer sessions and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion a student has, by his misconduct or breach of rules of the University, made himself ineligible: (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

The Office of Veterans Education, Building Q, 2029 H Street NW., a service unit for veterans and war orphans, acts in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

Public Law 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

Public Law 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

Public Law 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the University Office of Veterans Education at the time of registration.

Public Laws 16 and 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

AIR FORCE ROTC PROGRAM

A brochure describing the Air Force ROTC program in detail is available on request to the Division of Air Science, The George Washington University, Washington 6, D. C.

THE TESTING AND COUNSELING CENTER

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University, and secondarily to high school students and to adults of the community.

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties,

provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University, and for other selected educational institutions and tests for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community clients, $65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

THE READING CLINIC

The Reading Clinic, 2018 Eye Street NW., offers individual diagnostic and corrective services for all levels; primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $35; for individual instruction, $5 a lesson; for semi-individual instruction, $4 a lesson; for instruction in small groups with common reading difficulties, $3.25 a lesson. All fees are payable in advance at the Office of the Cashier.

THE SPEECH CLINIC

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, asphasia, foreign accent, voice, and articulatory problems.

Fees.—There is no charge for the diagnosis. The fee for individual instruction is $7 an hour; for group instruction, $4 an hour. Fees are payable at the Office of the Cashier.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

DAVIS-HODGKINS HOUSE

The Davis-Hodgkins House, 731 Twenty-second Street NW., is the student center of the School, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Student's Society welcomes as members students from other lands as well as North American students. The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. (The services of the Counseling Center (see page 48) are available to students and alumni wishing career guidance.)

The placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

STUDENT ACTIVITIES

DIRECTORS OF STUDENT ACTIVITIES

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

Student Government

Student Council.—The Student Council, which is elected annually by the Student body, is responsible for the conduct of student activities.

Committee on Student Life.—The Committee on Student Life is the judicial

branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members: President of Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. It is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

Eligibility for Student Activities

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, Adams Hall Council, Hancock Hall Council, Madison Hall Council, Strong Hall Council, Welling Hall Council, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The Engineers' Council

The Engineers' Council is the student governing body for the School of Engineering and Applied Science, composed of two elected representatives from each year class and from the graduate student body, one representative from each student organization in the School, the Business Manager of the *Mecheleciv*, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School, and sponsors the engineers' student magazine, *Mecheleciv*; the Annual Engineers' Mixer, Engineers' Ball, and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School.

The Council acts as the directing body for *Mecheleciv*, which is published six times a year and is sent free to all students in the School. This magazine includes campus and alumni news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff.

The control and administration of all student activities are outlined in a separate bulletin.

Sports Activities

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the departments of Physical Education in conducting the women's intramural and informal extra-mural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

Arts

Students may participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debate Society; University Players; University Glee Club; and University Orchestra. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

Annual Events

Colonial Program.—The Student Council sponsors a variety of cultural programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

Engineers' Mixers.—At the beginning of each semester the Engineers' Council sponsors a program of orientation, good fellowship, and entertainment to introduce new students.

Engineers' Day.—Sponsored by the Engineers' Council to acquaint high school students and their parents with the School of Engineering and Applied Science.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and Variety Show, the homecoming football game, and the homecoming dance.

Religion In Life Week.—Observed during the week of Thanksgiving, Religion In Life Week includes special lectures, classroom lectures, and fraternity and sorority discussion groups. Religion In Life Week is sponsored by the University Chapel in cooperation with the Committee on Religious Life and the religious organizations.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree (given and decorated by the Students of the School of Engineering and Applied Science), the singing of Handel's Messiah, and the observance of a special Christmas service at the University Chapel.

Engineers' Ball.—In the spring the Engineers' Council sponsors the Engineers' Ball, a social event for students and alumni.

Career Conference.—Under the sponsorship of the Student Council, guest speakers from many professions explore annually with students the potentialities of vocations available on graduation.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members and Student Council elections are announced.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

Honor Societies

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Sigma Epsilon.—A local engineering honor society established to recognize distinguished scholarship and exemplary character. Members are elected from the top one-eighth of those students in their next-to-last calendar year before graduation and from the top one-fifth of those students in their last calendar year.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Professional Organizations

American Institute of Electrical Engineers—Institute of Radio Engineers (Student Chapter).—Membership open to candidates for the degree of Bachelor of Science (Electrical).

American Society of Civil Engineers (Student Chapter).—Membership open to students who are candidates for the degree of Bachelor of Science (Civil).

American Society of Mechanical Engineers (Student Chapter).—Membership open to candidates for the degree of Bachelor of Science (Mechanical).

Theta Tau (Gamma Beta Chapter).—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the first year in the School of Engineering and Applied Science.

Other Organizations

Adams Hall Council, Alpha Theta Nu (scholarship winners), Big Sisters, Calhoun Hall Council, Cheerleaders, Chess Club, Colonial Boosters, Crawford Hall Council, Cultural Foundation, Democratic Club, Foggy Bottom Sports Car Club, Hancock Hall Council, Interfraternity Council, Interlaw Fraternity Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Junior Panhellenic Association, Madison Hall Council, Old Men, Republican Club, Senior Panhellenic Association, Strong Hall Council, Student Council, Student Legal Aid Society, Station WRGW, University Pep Band, Wandering Greeks, Welling Hall Council, Writers' Club.

Social Fraternities

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

Social Sororities

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

Student Publications

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mechecivi* (engineer's publication), *The Percolator* (pharmaceutical publication), *The Potomac* (literary magazine), *The Speculum* (medical annual), *The Student Handbook*.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the religious organizations of their choice. These various denominational groups form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

University Chapel

The University Chapel is a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of Chapel is available for counseling on personal problems.

Religious Organizations

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Association, Christian Medical Society, Christian Science Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Unitarian Club, United Christian Fellowship, Wesley Foundation.

COURSES OF INSTRUCTION

The courses of instruction in the School of Engineering and Applied Science are listed on the following pages. Courses numbered from 1 through 200 are planned for undergraduate credit; those numbered 201 and above are planned for graduate credit and may in certain instances be taken by qualified undergraduate students.

Courses offered in other colleges, schools, and divisions of the University, are described in the Division of University Students catalogue.

The number of semester hours credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours credit is marked (3). A semester hour consists of the completion of one fifty-minute period of class work or laboratory work for one semester.

APPLIED SCIENCE

UNDERGRADUATE

3 *Graphical Communication* (3)
Principles and methods of graphical communication, sketching, schematic diagrams, nomographs, charts and graphs, elements of descriptive geometry, spatial representation.

4 *Logic and Method in Analysis* (3)
Logic, methods of investigation and reasoning, hypothesis, inference, probability, analysis in the physical sciences and engineering.

5-6 *Finite Mathematics and Statistics in Science I–II* (3–3)
Statements, sets and functions, numbers systems, probability theory, linear algebra, convex sets, finite chains, basic statistical principles and methods, applications.

10 *General Field Theory* (3)
General theory of fields, Laplace and Maxwell equations, conformal mapping, particle motion in fields, potential.

11 *General Wave Theory* (3)
Basic wave mechanics; wave equations.

12 *Electromagnetic Wave Theory* (3)
Electromagnetic waves in bounded media, radiation, resonators, guides, microwaves.

29-30 *General Network Theory I–II* (3-3)
Network theorems and functions, Laplace transform, Fourier integral, linear and nonlinear circuits, stability, matrices, domains.

32 *Network Analysis* (3)
Solutions of equations using transformation calculus, poles and zeroes of network functions, correlation of domains, matrix representation, nonlinear circuit analysis.

50 *Information Theory* (3)
Basic concepts of information, sources, processes, errors, coding, transmission, capacity, noise.

55 *Control Theory* (3)
Theory of automatic control systems, steady-state and transient analysis, transfer functions, stability criteria.

58 *Analysis Methods* (3)
Methods for analyzing problems; use of fundamental principles of mathematics, science, and engineering in problem analysis.

59-60 *Introductory Analytical Mechanics I–II* (3–3)
Introduction to vector mechanics; statics and dynamics of particles, solids, and fluids; kinematics; behavior of solids and fluids acted upon by forces; Newton's Laws; concepts of stress and strain, with applications.

62 *Soil Mechanics* (3)
Soil mechanics theory, lateral pressure, seepage, failure, slope stability, bearing capacity, behavior under loading.

63 *Fluid Dynamics* (3)
Theory of compressible and incompressible fluid motion; concepts of potential, circulation and vorticity, lift and drag; shock.

64 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow, flow around immersed bodies, airfoil theory, shock wave theory, thermodynamics.

65–66 *System Dynamics I–II* (3–3)
Dynamics of linear systems, analogies, transient and steady-state analysis, Lagrange's equations, Hamilton's principle, introduction to gyrodynamics.

67 *Analytical Kinematics* (3)
Theoretical study of the motion of constrained and unconstrained rigid bodies.

68 *Deformable Body Mechanics* (3)
Analysis of stress and strain, introduction to theory of elasticity, introduction to theory of perfectly plastic solids.

70 *Earth Science* (3)
Formation of and properties of soils and rock, climatology, hydrology, ground water and river flow, seismology.

75 *Digital Circuitry and Systems* (3)
Basic concepts of digital programmed systems, mathematical foundations and techniques for logical design, computer logic and circuitry.

80 *Introductory Astronomy* (3)
Coordinate systems and nomenclature, description of astronomic systems, stars, stellar physics, elementary celestial mechanics.

85 *Thermodynamics* (3)
Theoretical study of fundamental concepts, first and second laws, equations of state, entropy, phase mixtures.

86 *Energy Conversion* (3)
Energy forms and states, energy fields, concepts of efficiency, conversion methods, limitations.

87 *Heat Transfer Theory* (3)
Theoretical concepts of conduction, convection, radiation; field and potential theory applied to conduction.

99 *Intermediate Comprehensive Evaluation Examination* (0)
Required of all students at the completion of the Introductory Level and prior to admission to the Intermediate Level. No academic credit; no fee.

101–2 *Materials Science I–II* (4–4)
Relations of materials structure to its properties, quantum and solid state concepts, crystal and lattice structures, plastics, cermets, elements of physical metallurgy, control of material properties and behavior.

105–6 *Fundamentals of Measurement Science I–II* (4–4)
Standards; measurements; error, accuracy, and precision; design of experiments.

107 *Statistics in Metrology* (3)
Qualitative and quantitative aspects of measurement, statistical methods, uncertainty and accuracy, corrections, sampling.

110 *Management Analysis* (3)
Principles of schematic, conceptual, and mathematical models; mathematical programming; operations analysis.

111 *Operations Research* (3)
Characteristics and capabilities of operations research, role in decision making, methods and techniques.

112 *Quantitative Techniques* (3)
Theoretical study of mathematical, statistical, and quantitative techniques for management.

121–22 *Structural Theory I–II* (4–4)
Theory and analysis of behavior of structures, model analysis, numerical methods, matrix algebra methods, collapse methods.

130 *Electrical Energy Conversion* (3)
Generalized machine theory, thermionics, thermoelectricity, fuel cells' photovoltaic principles, introduction to electromechanical components, elements of magnetohydrodynamics.

198 *Undergraduate Research* (1 to 3)
Research problems approved by the Faculty (credit is assigned in relation to work undertaken).

199 *Advanced Comprehensive Evaluation Examination* (0)
Required of all students at the completion of the Intermediate Level and prior to admission to the Advanced Level. No academic credit; no fee.

GRADUATE

201 *Automatic Control* (3)
Advanced theory of automatic control. Systems analysis, multiple loop systems, nonlinear systems.

211 *Mathematical Methods in Applied Science I* (3)
A course in such topics as functions of complex variables, infinite series, linear vector spaces and matrices, and partial differential equations.

212 *Mathematical Methods in Applied Science II* (3)
Mathematical topics include: introduction to tensor analysis, calculus of variations, finite differences, and integral equations.

216 *Advanced Dynamics* (3)
Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyrodynamics; operational methods. Prerequisite: permission of the instructor.

217 *Analytical Mechanics* (3)
Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.

218 *Mechanics of Orbits and Trajectories* (3)
Celestial mechanics. Orbits and trajectories in force fields. Dynamics of space vehicles.

219 *Mechanics of Continua* (3)
Mechanics of elastic, plastic, and viscous solids, and of fluids; introduction to theory and formulation of basic equations.

220 *Nonlinear Mechanics* (3)
Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.

221 *Theory of Elasticity I* (3)
Introduction to mathematical theory of elasticity, analysis of strain and stress, generalized Hooke's law, equilibrium equations, Beltrami-Mitchell equations, strain energy functions, torsion, general flexure.

222 *Theory of Elasticity II* (3)
First and second boundary-value problems in plane elasticity, uniqueness of solutions, simply and multiply connected regions, three-dimensional problems, thermoelasticity, vibration of elastic solids, variational methods.

223 *Celestial Mechanics* (3)
General equations of motion, Lagrange's planetary equations, disturbing function, Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation.

227 *Experimental Stress Analysis* (3)
Applications of the theory of elasticity in the analysis of strain and stress; theory of gaging for static and dynamic strain and stress measurements.

230 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow and thermodynamics of compressible fluids.

231 *Fluid Dynamics* (3)
Theory of compressible and incompressible fluid motion including potential motion, circulation, and vorticity; mathematical treatment of flow at sub-, trans- and supersonic velocities; normal and oblique shock; and elements of heat transfer.

233 *Problems in Applied Science* (3)
Investigation of problems in engineering and applied science, emphasizing imaginative and systematic application of fundamental principles in engineering, physics, and mathematics.

241 *Science of Materials* (3)
Relation of the atomic and microscopic structure of materials to their physical and mechanical properties and their mechanical behavior in applications.

242 *Magnetohydrodynamics* (3)
Study of the interaction of electromagnetic and fluid fields. Dynamics of conducting fluids in electromagnetic and magnetic fields.

250 *Theory of Structures I* (3)
Classical and modern methods of structural analysis; basic theory of plane structures; statically indeterminate structures, including continuous beams and trusses and arches; limitload analysis; special problems.

251 *Theory of Structures II* (3)
Statically indeterminate structural theory, including single and multi-span rigid frames and arches, deflection theory for arches and suspension bridges, thermal stress, and failure of structures.

252 *Theory of Structural Dynamics* (3)
Analysis of elastic structures under various dynamic loadings, both steady-state and transient, including vibrations of rigid frames, plates, and thin shells.

260 *Theory of Plates and Shells* (3)
Classical and modern theories of plates and shells, plates and cylindrical shells under different loadings and boundary conditions, equations for plates including shear, rotationally symmetric shells under small deformations, and their applications.

261 ***Plasticity of Solids*** (3)
Plastic flow and fracture of solids; theory of elastic perfectly plastic solids, including basic concepts, limit analysis of beams, rigid frames, and plane stress problems; theory of fracture.

262 ***Theory of Elastic Stability*** (3)
Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, arches, plates, stiffened plates, and shells; inelastic buckling.

263 ***Field Analysis and Potential Theory*** (3)
Fields of force, divergence, Newtonian potentials at points of free space, solutions of Laplace's equations, harmonic functions, logarithmic potential.

264 ***Electrodynamics*** (3)
Presence of moving matter in electromagnetic fields, force and energy in moving systems, relativistic concepts, tensors.

265 ***Electromagnetic Waves*** (3)
Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators, and microwave devices.

266 ***Electromagnetic Wave Propagation*** (3)
Ground waves; space-wave propagation, atmospheric effects, ionosphere; maximum usable frequency; bandwidth.

270 ***General Network Analysis*** (3)
Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeros of network functions, correlation of time and frequency domains, elements of network synthesis.

271 ***Advanced Network Analysis*** (3)
Advanced theory of lumped and distributed linear networks, matrices, stability, activity.

272 ***Active Network Theory*** (3)
Analysis of two-port networks; matrix representation of linear active networks; vacuum-tube and semi-conductor circuit theory; concepts of feedback, stability, and oscillators. Nonlinear circuit analysis, modulation, detection, communication systems.

273 ***Network Synthesis*** (3)
Basic techniques in the synthesis of linear two- and three-terminal passive networks; positive real functions; Foster, Cauer, Brune, Bott Duffin, Darlington procedures; elements of active network synthesis.

274 ***Analysis of Modulation and Noise*** (3)
Analysis of Fourier series and integrals of signals and linear networks, modulation and spectra, noise analysis including probability method of determining power spectra.

275 ***Physical Electronics*** (3)
Physical principles underlying operation of various electronic devices including vacuum tubes, electron lenses, transistors, and recent solid-state electronic devices.

280 ***Thermodynamics*** (3)
Reversible and irreversible processes, equilibrium, ideal and van der Waal's gases, dilute solutions, phase equilibria, electric and magnetic effects, radiation. Introduction to kinetic theory and statistical mechanics.

281 ***Heat Transfer*** (3)
Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan-Boltzmann and Planck laws for radiation, Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.

282 ***Gas Dynamics*** (3)
Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

283 *Hypersonic Fluid Dynamics* (3)
Small disturbance theory, Newtonian theory, constant-density solutions, thin shock layers, viscous interactions, free molecule and rarefied gas flows.

284 *Combustion Processes* (3)
Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes.

285 *Reaction Kinetics* (3)
Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems.

286 *Information Theory* (3)
Discrete and continuous systems; ergodic ensembles and random processes; correlations, filtering, prediction; redundancy.

287 *Automata and Self-organizing Systems* (3)
Effectively computable functions and Turing machines, digital computational methods in Boolean algebra, combinational circuits and their analysis, recursion circuits and their analysis, reliability of automata, networks of automata, artificial intelligence.

298 *Research* (1 to 3)
Research as arranged.

299–300 *Thesis* (3–3)

ENGINEERING

UNDERGRADUATE

1 *Engineering Planning and Economics* (3)
Analysis, planning, and economics of engineering projects using mathematical and modern computational methods.

2 *Regional and Urban Planning* (3)
Engineering aspects of regional and urban planning: including transportation, water supply and sewerage, public safety and convenience, utilities, and natural resources.

10 *Hydraulic Engineering* (3)
Hydraulic system design; including pipe networks, river and channel flow; drainage and irrigation, water supply, and sewerage.

11–12 *Design of Structures I–II* (3–3)
Analysis and design of structures under static and dynamic loading, including wood, metal, and concrete structures; plastic design; ultimate strength design.

13–14 *Structural Design Laboratory I–II* (3–3)
Analysis and design of solutions to structural problems.

15 *Structural Dynamics* (3)
Analysis and design of structures under vibration, earthquake, blast, and other dynamic loading; energy methods; applications of matrix algebra.

19–20 *Engineering Electronics I–II* (3–3)
Analysis and design of: vacuum tube and solid state devices; voltage and power amplifiers; feedback amplifiers; oscillators; equivalent, relaxation, and computing circuits.

22 *Digital Techniques* (3)
Automatic programming techniques, self detecting and correcting codes, logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams.

23-24 *Computer Laboratory I–II* (3-3)
Use of digital and analog computers; including design, logical circuitry, programming, operation, maintenance, and troubleshooting.

30 *Applied Thermodynamics* (3)
Vapor cycles, combustion, gas dynamics, equilibrium, multiphase mixtures.

31–32 *Thermal Power I–II* (3–3)
Analysis and design of systems and components in heat power, gas and vapor turbine, internal combustion engine, heat pump, and nuclear power systems.

35 *Fluid Machinery* (3)
Theory and design of dynamic machines; including turbomachinery, torque converters and couplings, and jet machines.

49–50 *Precise Electrical Measurements I–II* (3–3)
Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power, resistance, capacitance, inductance, energy, phase angle, frequency and time; dielectric and magnetic measurements; topics in high-frequency measurement including field strength, signal-to-noise ratio, impedance, attenuation.

52 *Introductory Transducers and Instrumentation* (3)
Theory, design, and application of simple transducers; design of instrumentation of one-type systems; analysis and design of simple transducer instrumentation.

53 *Advanced Transducers and Instrumentation* (3)
Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types.

54 *Precise Mechanical Measurements* (4)
Techniques for precise measurement of mass, time, weight, density, force, pressure, vibration, acceleration, flow, and viscosity.

55 *Precise Heat Measurements* (4)
Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure, thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters.

101–2 *Communications Laboratory I–II* (3–3)
Analysis and design of solutions to problems in communications and information.

103–4 *Control Laboratory I–II* (3–3)
Analysis and design of electrical, mechanical, pneumatic, hydraulic, and combined control systems.

105–6 *Electrical Engineering Laboratory I–II* (3–3)
Design projects involving electrical and electromechanical devices and systems.

107–8 *Electronics Laboratory I–II* (3–3)
Design projects involving electronic devices and instrumentation.

109–10 *Energy Conversion Laboratory I–II* (3–3)
Analysis and design of solutions to problems in converting energy states and forms.

111–12 *Mechanical Engineering Laboratory I–II* (3–3)
Design projects involving mechanical, thermal, thermomechanical, and electromechanical devices.

199 *Engineering Research* (1 to 3)
Undergraduate research projects as approved by the Faculty. (Credit is assigned in relation to the work undertaken.)

GRADUATE

201 *Metal Structures* (3)
Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design.

202 *Ultimate Strength of Reinforced Concrete Structures* (3)
Modes of failure of reinforced concrete structures; experimental data on failure, ultimate strength concepts for the analysis of beams, slabs, and columns.

203 *Prestressed Concrete Structures* (3)
Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members.

204 *Geotechnics in Soil Mechanics* (3)
Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement, flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action.

205 *Theoretical Soil Mechanics* (3)
Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics.

206 *Foundation Engineering* (3)
Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling and water front structures.

210 *Space Structures* (3)
Theory of structures in three dimensions; trusses, rigid frames, and thin-shell structures.

211 *Experimental Structural Analysis* (3)
Experimental analysis of truss, rigid frame, plate, and shell structures; large- and small-deflection models; similitude.

212 *Concepts of Structural Design* (3)
Mechanical behavior and failure of structures as determined by properties of materials, nature of structure, and type of loading; selection of type of structure; structural analysis, its applications and possible simplifications.

220 *High-frequency Electronics* (3)
High frequency operation of electron tubes and semiconductor devices, transit time, bunching, pulse techniques.

221 *Industrial Electronics* (3)
Gaseous tubes and applications; rectifiers; timing circuits; induction and dielectric heating; regulation and control, magnetic amplifiers.

222 *Electronic Measurements in Medicine* (3)
Theory of measurements in biological areas, field and circuit theory as a foundation for measurements, techniques for electronic measurements on biological specimens, problems in medicine and psychology with emphasis on measurements and measuring devices.

223 *Physical Basis for Medical Electronics* (3)
Electrical and acoustical properties of biological material; structural components of biological material as they affect its dielectric and acoustical behavior, electrical relaxation phenomena in general and their application to biological material in particular, applications in diathermy and electrocardiography, impedance determination.

230 *Digital Techniques* (3)
Automatic programming techniques, self-detecting and correcting codes, advanced logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog to-digital techniques, wiring diagrams.

231 *Digital Circuitry and Systems* (3)
Introduction to basic concepts of modern digital programmed systems, mathematical foundations and techniques for logical design of digital circuits, electronic design of computer circuits.

232 *Digital Systems* (3)
The programmed system; system design of digital computers, special-purpose digital computers, reliability, data processing techniques, analog-to-digital and digital-to-analog techniques.

233 *Microwaves* (3)
Transmission lines; waveguides; antennas; resonators; amplifiers and oscillators; klystrons, magnetrons, traveling wave tubes.

234 *Antennas* (3)
Maxwell's equations, radiation, impedance, directional characteristics, arrays, aperture antennas.

235 *Communication Systems* (3)
Radar, television; ultrahigh frequency systems; navigational aids.

240 *Power Transmission* (3)
Transmission lines, exact and approximate equivalent circuits, standing waves, filtering, protection, radio interference, high voltage, line configurations.

241 *Power Generation* (3)
Steam, hydroelectric, and nuclear plants; fuel cells; magnetohydrodynamics; efficiency; reheat cycles; stability; load factors; generator swings.

242 *Power Systems* (3)
Substations, transformers, distribution networks, short and open circuit analysis, symmetrical components, stability, network analyzers.

270 *Advanced General Metrology* (3)

271, 72 *Probability and Statistics of Metrology I, II* (3–3)
Probability distributions, discrete and continuous distributions; sampling; combinational analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analyses of experiments, Latin Square experiments, factorial experiments, block and lattice design.

273 *Microwave Measurements* (3)
Measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies. Characteristics and Q of resonant devices.

274 *Precise Optical Measurements* (3)
Optical constants of lens systems, aberrations, resolving power; illumination in focal plane; image evaluation, magnification, index of refraction, color and color temperature.

298 *Research* (1 to 3)
Research as arranged.

299, 300 *Thesis* (3, 3)

ENGINEERING ADMINISTRATION

GRADUATE

201 ***Engineering Administration I*** **(3)**

The application of scientific method to the (1) planning element and (2) organizing of the administrative process. Characteristics of plans, establishing objectives and goals, determining policies and procedures, preparing plans to meet stated objectives and goals, organization for planning, testing of plans. Characteristics of organization, patterns of departmentation authority, responsibility, levels of specialization, coordination, decentralization, work division, staff, committees. Introduction to analysis for decision making.

202 ***Engineering Administration II*** **(3)**

Sequential to Engineering Administration I. The application of scientific method to the (3) directing or managing element and (4) control element of the administrative process. Personnel management, organized labor, executive leadership, communication, implications of automation, systems analysis for effective administration. Methods of evaluation and control of operations, e.g., financial analysis, budgeting, administrative audits.

204 ***Administration of Engineering Contracts*** **(3)**

Study of types of contracts, proposal preparation, evaluating contracts, negotiation, contract extension policies and procedures, appraisal of capabilities of contractors.

207 ***Personnel Administration*** **(3)**

Study of personnel functions with emphasis on relationships within organizations which utilize the services of engineers and scientists: employment, health, safety, education and training, financial compensation, union relations, collateral benefits and services, human relations and personnel research practices in engineering and industry.

210 ***Engineering Law*** **(3)**

Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, anti trust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and development contracts.

253 ***Management of Production Processes and Facilities*** **(3)**

Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs.

254 ***Principles and Procedures of Automatic Data Processing Systems*** **(3)**

Logic of computers, arithmetic and control units, computers as systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes.

255 ***Administration of Research and Development*** **(3)**

Contemporary practices of administrators of scientific and engineering research and development for the purpose of finding uniformities, characteristics, and conceptual schemes; relation of such findings to accepted managerial concepts, and projection of their implications on contemporary managerial heirarchies and organizational structures.

261 ***Economic Analysis in Engineering Planning*** **(3)**

Important concepts and theories employed in economic analysis of engineering projects. Application of tools and techniques used in various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field.

263 *Quantitative Techniques of Engineering Administration* (3)
Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

271 *Operations Research* (3)
Background and application of operations research; history, characteristics, capabilities, administrative considerations, methods and techniques, including construction of conceptual and mathematical models.

272 *Problems in Operations Research* (3)
Field experience in operations research on a team basis. Each small group locates an actual problem and formulates and solves it by operations research models. Class evaluation of progress.

275 *Linear Programming* (3)
The basic computational, theoretical, and applied areas with emphasis on the general linear programming problem; simplex computational procedure; duality; transportation and assignment problems; production scheduling problem; zero-sum two person games; applications and recent developments.

276 *Theory of Games* (3)
Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, mixed strategies, minimax concept, connections with linear programming and decision functions, two person and n person zero and nonzero sum games.

277 *Queuing Theory* (3)
Study and analysis of operational systems with variables in arrivals and service, Monte Carlo analysis, optimization methods.

285 *Seminar in Administrative Problems* (3)
Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: admission to candidacy and completion of at least 18 semester hours of graduate study.

298 *Research in Engineering Administration* (arr.)
Application of established principles to new engineering administrative situations; the development of new knowledge of administration. Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

299-300 *Thesis* (3-3)

COURSES FROM OTHER DEPARTMENTS

On the following pages appears a list of courses offered in other departments of instruction which are most often of interest to students in the School of Engineering and Applied Science. A complete listing of courses appears in the Division of University Students catalogue.

Elective courses in the humanities and social studies may be selected from the offerings of the following departments of instruction.

Art
Classical Languages and Literatures
Economics
English:
  American Literature
  English Literature
Geography
Germanic Languages and Literatures
History
Philosophy
Political Science
Religion
Romance Languages and Literatures
Slavic Languages and Literatures
Sociology and Anthropology

Courses offered in these departments are described in the Division of University Students catalogue.

Electives other than electives in the humanities and social studies, taken to fulfill the 140 semester hour degree requirement, need not to be confined to the above list, but credit is not given for courses in Physical Education, Secretarial Studies, English A, B; Mathematics 3, 6; or Speech B.

ACCOUNTING

115 ***Survey of Accounting*** (3)
Accounting systems used by single proprietorships and corporations with emphasis on methods of compiling, analyzing, classifying, and summarizing accounting data; and the use of accounting information in the management process.

215 ***Survey of Managerial Accounting*** (3)
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process.

293 ***Budget Preparation and Administration*** (3)
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial, industrial and government organizations.

AIR SCIENCE

BASIC COURSE

1-2 ***Leadership Laboratory—Freshman Year*** (1–1)
Cadet basic airman training. Defense orientation, military courtesy, discipline, appearance and bearing; element, flight squadron, and mass formation drill; parades and ceremonies; the military mission and the problem of national security. Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3.

11-12 ***Leadership Laboratory—Sophomore Year*** (1–1)
Cadet noncommissioned officer training. Military bearing and courtesy, all phases of drills and ceremonies, command voice training and command responsibility. Prerequisite: Air Science 1-2, 21-22 for men and Air Science 1-2 for women. Politica

Science 1 or 9 is recommended as an elective during the sophomore year in preparation for Political Science 171 (see Air Science 151–52). Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3.

21 *Air Science—Freshman Year* (2 or 3)

Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical and natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science as meeting the pre-commission officer educational requirements.

22 *Air Science—Freshman Year* (2)

A general survey of aerospace power designed to provide an understanding of the elements of aerospace power; and an introduction to the mechanics of aerospace vehicles and to the composition of and necessity for national security forces. Instruction includes potentials of aerospace power, air vehicles and principles of flight, the military instrument of national security, and professional opportunities in the United States Air Force.

51 *Air Science—Sophomore Year* (2)

An introduction to aerospace missiles and aircraft and their propulsion systems; aerospace defense; modern targeting and electronic warfare; high explosive, nuclear, chemical, and biological warheads; aerospace strategic and tactical organizations and operations with contemporary Air Force weapon systems. Includes problem, mechanics, and military implications of present and future space operations; contemporary aerospace military thought.

52 *Air Science—Sophomore Year* (2 or 3)

Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical or natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science at meeting the pre-commission officer educational requirements. Political Science 1 or 9 is recommended as an elective during the sophomore year in preparation for Political Science 171 (see Air Science 151–52).

Advanced Course

101–2 *Air Science—Junior Year* (1–1)

Air Force officer development. Knowledge and skills required of a junior officer in the Air Force. This includes the Air Force commander, his staff, and the air base; the military justice system; and preparation for summer training. Prerequisite or concurrent registration: Business Administration 102 and 198, which are not to be taken in the same semester of the academic year.

103–4 *Leadership Laboratory—Junior Year*

(Credit is a part of Air Science 101–2)

Cadet noncommissioned officer and officer training. Wearing of the uniform, parades and ceremonies, commands and command voice. Cadets perform duties involving planning for and supervision of Cadet Corps activities. Emphasis placed on leadership and management proficiency. Minimum 15 hours a semester.

105 *Summer Training Unit—Between Junior and Senior Years* (required)

Attendance at a four week Air Force ROTC summer training unit at an Air Force base within continental United States is mandatory. Program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training.

151–52 *Air Science—Senior Year* (1–1)

First half: weather and navigation. A study of the weather and navigational aspects of aircraft, such as temperature, pressure, air masses, precipitation, weather charts, and dead reckoning navigation. *Second half:* the Air Force officer. A study of materials to help the cadet make a rapid effective adjustment to active duty as an officer of the United States Air Force. Prerequisite or concurrent registration: Political Science 171 and Geography 146, which are not to be taken in the same semester of the academic year. Only pilot candidates need take weather and navigation. Others may substitute any college course approved by the Division of Air Science.

153–54 *Leadership Laboratory—Senior Year*
(Credit is a part of Air Science 151–52)
Cadet officer training. Cadet officers conduct activities of Corps of Cadets through chain of command, instruct subordinates, plan and supervise Cadet Corps training and administration. Preparation for commissioned officer duties. Development of leadership and managerial responsibilities. Minimum 15 hours per semester.

CHEMISTRY

11–12 *General Chemistry* (4–4)
A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester.

13–14 *General Chemistry* (4–4)
A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 11 and Mathematics 21 or 29. Laboratory fee, $18 a semester.

21 *Qualitative Inorganic Analysis* (4)
Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semimicro techniques. Prerequisite: Chemistry 12 or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, $18.

22 *Quantitative Inorganic Analysis I* (4)
Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18.

ENGLISH*

A *English for Foreign Students* (3)
A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary.

B *English for Foreign Students* (3)
For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style.

1 *English Composition (3)**
Review of grammar, exercises in composition, readings.

1X *English Composition (3)**
An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets five hours a week and carries 3 semester hours of credit. The tuition fee is $124 (the regular fee of $33 a semester hour, plus an additional fee of $25).

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six hour composition course.

2 *English Composition** (3)
Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X.

11 *The Writing of Reports* (3)
Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X, and 2.

MATHEMATICS

21 *Calculus I* (3)
Elementary concepts of analytic geometry. Differential and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one half year of high school trigonometry; or the equivalent.

22 *Calculus II* (3)
Differentiation and integration of transcendental functions and applications; conics; parametric equations; techniques of integration. Prerequisite: Mathematics 21.

23 *Calculus III* (3)
Vector concepts; improper integrals; solid geometry; partial differentiation and applications. Prerequisite: Mathematics 22.

24 *Calculus IV* (3)
Multiple integration with applications; infinite series; differential equations. Prerequisite: Mathematics 23.

27 *Calculus I and II* (6)
The equivalent of Mathematics 21 and 22.

28 *Calculus III and IV* (6)
The equivalent of Mathematics 23 and 24.

111 *Mathematics for Engineers and Physicists I* (3)
Differential equations, vector analysis, introduction to matrix algebra. Prerequisite: Mathematics 30 and 31, or 24.

112 *Mathematics for Engineers and Physicists II* (3)
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or 132.

PHYSICS

11 *Introductory Physics* (3)
An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by non-science students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Lectures, laboratory, and recitation. Material fee, $11.

14 *General Physics* (3)
Mechanics, wave motion, and sound. Prerequisite: Physics 11. Prerequisite or concurrent registration: Mathematics 29 or 22. Lecture, laboratory, and recitation. Material fee, $11.

15 *General Physics* (3)
Electricity and magnetism. Prerequisite: Physics 14. Prerequisite or concurrent registration: Mathematics 30 or 23. Lecture, laboratory, and recitation. Material fee, $11.

16 *General Physics* (3)
Modern physics, molecular structure of matter, structure of the atom. Prerequisite: Physics 13 or 15, Mathematics 30 or 23, and consent of the instructor.

113 *Atomic Physics* (3)
Properties of elementary particles, interactions with radiation, atomic structure, optical and X ray spectra, introduction to wave mechanics. Prerequisite: Physics 16, 101 or 105, or the equivalent, Mathematics 31 or 24.

114 *Statistical Physics* (3)
Classical and quantum statistics with emphasis on Maxwell Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 16, Mathematics 31 or 24, permission of the instructor.

116 *Quantum and Solid State Physics* (3)
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111.

118 *Introduction to Solid State Physics* (3)
Dielectric and magnetic properties of solids, electron theory of metals, semi-conductors, dislocations, and plastic flow. Prerequisite: Physics 113.

123 *Nuclear Physics* (3)
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. Prerequisite: Physics 113.

128 *Sound* (3)
Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 16, Mathematics 31 or 24.

181 *Biophysics* (3)
Molecular basis of biophysics, biosynthesis, and reproduction. Molecular and genetic aspects of the effects of radiation. Physicochemical equilibria, steady states, and transients in biological systems; order, disorder, and information theory. Admission by permission of the instructor.

191 *Nuclear Reactors* (3)
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 16, Mathematics 31 or 24.

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Alumni Fund.

The Alumni Office is in **Bacon Hall, 2000 H Street NW., Washington 6, D. C.**

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering and Applied Science in closer fellowship, to promote the general welfare of the School of Engineering and Applied Science and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

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THE UNIVERSITY

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government."

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provisions of Washington's will, and the stock he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government."

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "that persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the College was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Nearby buildings accommodated the School of Medicine and somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The School of Engineering and Applied Science was organized October 1, 1884 as the Corcoran Scientific School of Columbian University and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The school was among the first to accept women for degree candidacy in engineering.

In 1903 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate.

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the school was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1903 was continued and has remained to this day as one of the important distinguishing features of the School.

In 1962 the name of the School became the School of Engineering and Applied Science.

The location of the School of Engineering and Applied Science in the nation's capital makes available a group of outstanding engineers and scientists as lecturers. It is traditional for the School to include these eminent professional specialists among the staff of instruction.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

Those curricula of the School of Engineering and Applied Science which are within the purview of the Engineers' Council for Professional Development are accredited by that agency.

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* The Staff of Instruction listed here is for the academic year 1962–63.
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Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

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School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

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The George Washington University

Bulletin



THE NATIONAL

The Graduate School

LAW CENTER
The Law School
of Public Law
1963-64

WASHINGTON 6, D. C.
DECEMBER 1962
Vol. LXII No. 4

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The George Washington University

Bulletin

THE NATIONAL LAW CENTER

The Law School

The Graduate School of Public Law

1963-64

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22	23	24	25	26	27	28
29	30	....	....	....	....	....

December

....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....

CALENDAR
1963-64

SUMMER TERM:		
Registration for both sessions	June 10	Mon
First session begins	June 11	Tues
Independence Day. Holiday	July 4	Thurs
Last day of classes	July 22	Mon
First-session examination period	July 23–25	Tues–Thurs
Registration for students attending second session only	July 26	Fri
Second session begins	July 29	Mon
Labor Day. Holiday	Sept 2	Mon
Last day of classes	Sept 6	Fri
Second-session examination period	Sept 9–11	Mon–Wed
FALL SEMESTER:		
Registration	Sept 19–21*	Thurs–Sat
Application for Feb graduation due in Registrar's Office		
Classes begin	Sept 23	Mon
S.J.D. dissertations of Feb candidates due in Dean's Office	Oct 4	Fri
Veterans Day. Holiday	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
Classes resume	Jan 2	Thurs
Last day of fall-semester classes	Jan 18	Sat
Examination period	Jan 20–28	Mon–Tues
SPRING SEMESTER:		
Registration	Jan 30–Feb 1*	Thurs–Sat
Application for June graduation due in Registrar's Office		
Spring-semester classes begin	Feb 3	Mon
S.J.D. dissertations of June candidates due in Dean's Office	Feb 7	Fri
Winter Convocation. Holiday	Feb 22	Sat
Application for 1964–65 scholarships due	March 1	Sun
Application for 1964–65 Teaching Assistantships due	March 15	Sun
Spring recess	March 25–31	Wed–Tues
Application for Research Assistantships due	May 1	Fri
Last day of spring-semester classes	May 20	Wed
Examination period	May 20–29	Wed–Fri
Memorial Day. Holiday	May 30	Sat
Baccalaureate Service	June 7	Sun
Commencement	June 7	Sun

* Thursday and Friday from 12:00 to 8:00 P.M.; Saturday from 10:00 A.M. to 1:00 P.M.

OFFICERS OF ADMINISTRATION

THE UNIVERSITY

Thomas Henry Carroll, B.S., M.B.A., D.C.S., LL.D., *President*
Robert Smith Jordan, Ph.D., D.Phil., *Assistant to the President*
Claud Max Farrington, A.M., *Assistant to the President, for Special Projects*
Oswald Symister Colclough, B.S., LL.B., LL.D., Sc.D., *Provost and Dean of Faculties*
John Francis Latimer, Ph.D., *Associate Dean of Faculties; University Marshal*
William Parkhurst Smith, Jr., A.B., M.B.A., *Assistant to the Dean of Faculties, for Planning*
Henry William Herzog, B.S., *Vice President and Treasurer*
John Anthony Brown, Jr., A.M., L.H.D., LL.D., *Vice President for Development*

Paul Vernon Bissell, Ph.D., *Director of Activities for Men; Director of Veterans Education*
Richard Bernard Castell, A.B., M.D., *Director of Health Administration*
Charles William Cole, Ph.D., *Dean of the Summer Sessions*
Alan Thomas Deibert, A.M., *Adviser to Students from Foreign Countries*
John Collum Einbinder, A.B., *Business Manager*
Frederick Russell Houser, A.M., *Registrar; Secretary of the Faculties*
William David Johnson, B.S. in B.A., *Comptroller*
Virginia Randolph Kirkbride, A.M., Ed.D., *Director of Activities for Women*
John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*
Joseph Young Ruth, A.B., *Director of Admissions*
Joseph Richard Sizoo, A.M., D.D., Litt.D., LL.D., L.H.D., S.T.D., *Director of University Chapel*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Dean for Sponsored Research*

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences, —in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to the Bachelor's and Master's degrees and two-year preprofessional and terminal curricula; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, the Supreme Court, and other federal courts.

THE NATIONAL LAW CENTER

HISTORY

Established in 1959, the National Law Center seeks, as an integral part of a University, to establish and coordinate programs of teaching, research, and creative development in law which will assist the profession to meet the demands placed upon it by contemporary society. The Center consists of two separate but closely related schools: the Law School and the Graduate School of Public Law. Emphasizing an interdisciplinary approach to modern social, political, scientific and economic problems having legal implications, the Center also encourages close relations with other appropriate units of the University.

OFFICERS OF ADMINISTRATION

Charles Bernard Nutting, A.B., J.D., LL.M., S.J.D., I.L.D., Litt.D., L.H.D., *Dean of the National Law Center*
Robert Kramer, A.B., LL.B., *Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Dean of the Graduate School of Public Law*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Associate Dean of the Law School*
Edward Andrew Potts, A.B., LL.B., *Assistant Dean for Development in the National Law Center*

THE FACULTY AND STAFF OF INSTRUCTION*

EMERITUS FACULTY

Charles Sager Collier, *Professor Emeritus of Law*
A.B. 1911, LL.B. 1913, S.J.D. 1932, Harvard University
George Bowdoin Craighill, *Professor Emeritus of Law*
AB 1903, University of the South; LL.B. 1906, Georgetown University
James Oliver Murdock, *Professor Emeritus of Law*
Ph.B. 1916, University of Chicago; LL.B. 1924, Harvard University
Alvin LeRoy Newmyer, *Professor Emeritus of Law*
LL.B. 1906, The George Washington University

ACTIVE FACULTY

Edward Abbot Beard, *Professorial Lecturer in Law*
LL.B. 1939, Georgetown University; Judge, Municipal Court for the District of Columbia
Carville Dickinson Benson, *Professor of Law; Associate Dean of the Law School*
A.B. 1920, Johns Hopkins University; LL.B. 1923, S.J.D. 1926, Harvard University
Hugh Yancey Bernard, Jr., *Librarian of the Law Library*
A.B. 1941, University of Georgia; B.S. in L.S. 1947, Columbia University; J.D. 1961, The George Washington University
Thomas Hayward Brown, *Associate Professorial Lecturer in Law*
Member of the bar of the District of Columbia

* The President of the University, the Dean of Faculties, the Dean of the National Law Center, the Dean and Associate Dean of the School, the Assistant Dean for Development in the National Law Center, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty of the Law School. Faculty and Staff of Instruction for the academic year 1962-63.

GEORGE DAVIS CARY, *Lecturer in Law*
B.S. 1932, University of Pennsylvania; LL.B. 1938, The George Washington University; LL.M. 1942, Georgetown University

MANUEL FREDERICK COHEN, *Professorial Lecturer in Law*
B.S. 1933, Brooklyn College; LL.B. 1936, Brooklyn Law School

SHELDON STANLEY COHEN, *Associate Professorial Lecturer in Law*
A.B. 1950, J.D. 1952, The George Washington University

OSWALD SYMISTER COLCLOUGH, *Professor of Law; Provost and Dean of Faculties*
B.S. 1920, United States Naval Academy; LL.B. 1935, Sc.D. 1961, The George Washington University; LL.D. 1946, Muhlenberg College; LL.D. 1958, Dickinson College

ROBERT MCKINNEY COOPER, *Professor of Law*
Ph.M. 1931, University of Wisconsin; J.D. 1934, University of Michigan

JAMES FORRESTER DAVISON, *Professor of Law*
A.B. 1921, LL.B. 1923, Dalhousie University; LL.M. 1924, S.J.D. 1929, Harvard University

*ROBERT GALLOWAY DIXON, JR., *Professor of Law*
A.B. 1943, Ph.D. 1947, Syracuse University; LL.B. 1956, The George Washington University

JUSTIN LINCOLN EDGERTON, *Professorial Lecturer in Law*
A.B. 1929, LL.B. 1931, The George Washington University

MONROE HENRY FREEDMAN, *Associate Professor of Law*
A.B. 1951, LL.B. 1954, LL.M. 1956, Harvard University

WILLIAM THOMAS FRYER, *Professor of Law*
A.B. 1922, LL.B. 1924, The George Washington University; J.D. 1925, Yale University

GEORGE JOSEPH GOLDSBOROUGH, *Professorial Lecturer in Law*
B.S. 1947, United States Military Academy; J.D. 1950, The George Washington University

WILLIAM WOOLCOTT GOODRICH, *Lecturer in Law*
LL.B. 1938, University of Texas

DAVID CRITTENDEN GREEN, *Associate Professor of Law*
A.B. 1948, Harvard University; LL.B. 1951, University of Virginia

HAROLD PAUL GREEN, *Associate Professorial Lecturer in Law*
A.B. 1942, J.D. 1948, University of Chicago

JACKSON REID HAMBRICK, *Professor of Law*
A.B. 1938, Wofford College; LL.B. 1942, Duke University

LOUIS JAMES HARRIS, *Professorial Lecturer in Law*
A.B. 1932, Cornell University; LL.B. 1939, S.J.D. 1942, Brooklyn Law School; LL.M. 1948, The George Washington University

GEORGE LUZERNE HART, JR., *Professorial Lecturer in Law*
A.B. 1927, Virginia Military Institute; LL.B. 1930, Harvard University; Judge, United States District Court for the District of Columbia

MURDOCK HEAD, *Professorial Lecturer in Forensic Medicine*
D.D.S. 1947, University of Louisville, M.D. 1953, University of Vermont, LL.B. 1958, The George Washington University

PHILIP FIELD HERRICK, *Professorial Lecturer in Law*
A.B. 1929, Williams College; LL.B. 1933, LL.M. 1936, The George Washington University

JOHN WINGFIELD JACKSON, *Adjunct Professor of Law*
B.S. 1928, University of Pennsylvania; LL.B. 1932, The George Washington University

ALAN HIRSH KAPLAN, *Lecturer in Law*
A.B. 1951, LL.B. 1954, New York University; LL.M. 1957, Harvard University

RAYMOND KELLAM, *Lecturer in Law*
A.B. 1946, Ball State Teachers College; J.D. 1948, University of Indiana; LL.M. 1961, Southern Methodist University

JOHN ALEXANDER KENDRICK, *Clerk of the Trial Practice Court*
A.B. 1942, LL.B. 1943, The George Washington University

WILLIAM WALLACE KIRKPATRICK, *Associate Professor of Law*
A.B. 1934, LL.B. 1938, Harvard University

ROBERT KRAMER, *Professor of Law; Dean of the Law School*
A.B. 1935, LL.B. 1938, Harvard University

STUART CHARLES LAW, *Associate Professor of Law*
A.B. 1950, LL.B. 1953, Yale University

†GUST ANGELO LEDAKIS, *Associate Professor of Law*
B.B.A. 1953, LL.B. 1955, University of Washington; S.J.D. 1958, University of Michigan

* On sabbatical leave fall semester 1962-63.
† On sabbatical leave spring semester 1962-63.

ALFRED LETZLER, *Lecturer in Law*
A.B. 1931, Cornell University; LL.B. 1933, Columbia University

HERBERT JOSEPH LIEBESNY, *Associate Professorial Lecturer in Law*
J.D. 1935, University of Vienna

WILLIAM THOMAS MALLISON, JR., *Professor of Law*
A.B. 1940, University of Washington; LL.B. 1948, Vanderbilt University

HENRY GIRARD MANNE, *Associate Professor of Law*
A.B. 1950, Vanderbilt University; J.D. 1952, University of Chicago; LL.M. 1953, Yale University

LOUIS HARKEY MAYO, *Professor of Law; Dean of the Graduate School of Public Law*
B.S. 1940, United States Naval Academy; LL.B. 1949, University of Virginia; J.S.D. 1953, Yale University

JOHN ALBERT MCINTIRE, *Professorial Lecturer in Law*
A.B. 1928, LL.D. 1954, Wittenberg College; LL.B. 1931, University of Cincinnati

LEROY SORENSON MERRIFIELD, *Professor of Law*
A.B. 1938, LL.B. 1941, University of Minnesota; M.P.A. 1942, S.J.D. 1956, Harvard University

ARTHUR SELWYN MILLER, *Professor of Law*
A.B. 1938, Willamette University; LL.B. 1949, Stanford University; J.S.D. 1959, Yale University

GEORGE EDWARD MONK, *Professorial Lecturer in Law*
A.B. 1928, LL.B. 1930, LL.M. 1934, The George Washington University

RALPH CLARKE NASH, JR., *Associate Professor of Law; Director of the Government Contracts Programs*
A.B. 1953, Princeton University; J.D. 1957, The George Washington University

LESTER NURICK, *Professorial Lecturer in Law*
B.S.S. 1934, City University of New York; LL.B. 1937, Brooklyn Law School

CHARLES BERNARD NUTTING, *Professor of Law; Dean of the National Law Center*
A.B. 1927, J.D. 1930, State University of Iowa; LL.M. 1932, S.J.D. 1933, Harvard University; LL.D. 1957, University of Pittsburgh; Litt.D. 1957, Geneva College; L.H.D. 1957, Seton Hill College; LL.D. 1960, Dickinson College of Law

EDWARD ANDREW POTTS, *Lecturer in Law; Assistant Dean for Development in the National Law Center*
A.B. 1949, University of Michigan; LL.B. 1952, The George Washington University

BERNARD RAMUNDO, *Lecturer in Law*
A.B. 1947, City University of New York; LL.B. 1949, A.M. 1957, Columbia University

IRVIN HAROLD RIMEL, *Lecturer in Law*
B.S. 1934, University of Illinois; J.D. 1942, The George Washington University

GEORGE NELSON ROBILLARD, *Professorial Lecturer in Law*
B.S. 1924, United States Naval Academy; LL.B. 1930, St. John's University School of Law

PAUL ARCHIBALD ROSE, *Associate Professorial Lecturer in Law*
LL.B. 1930, Washington College of Law

LEWIS AARON SCHILLER, *Assistant Professor of Law*
A.B. 1950, LL.B. 1952, University of Texas; A.M. 1958, Fletcher School of Law and Diplomacy

DAVID EARL SEIDELSON, *Assistant Professor of Law; Faculty Editor-in-Chief of the Law Review*
A.B. 1951, LL.B. 1956, University of Pittsburgh

DAVID JAMES SHARPE, *Assistant Professor of Law*
A.B. 1950, University of North Carolina; LL.B. 1955, Harvard University

DUDLEY GRAHAM SKINKER, *Associate Clerk of the Trial Practice Court*
LL.B. 1940, The George Washington University

JOHN PAUL SULLIVAN, *Assistant Professor of Law*
A.B. 1952, Boston College; Ph.B. 1953, St. John's Seminary; LL.B. 1958, Georgetown University

WALTER STERLING SURREY, *Professorial Lecturer in Law*
B.S. 1930, University of Virginia; LL.B. 1939, Yale University

ORVILLE HASSLER WALBURN, *Professor of Law*
A.B. 1925, Franklin and Marshall College; LL.B. 1930, University of Pennsylvania; J.D. 1952, Georgetown University

LEONARD PATRICK WALSH, *Professorial Lecturer in Law*
A.B. 1927, University of Minnesota; LL.B. 1933, National University; Judge, United States District Court for the District of Columbia

DAVID BENSON WEAVER, *Professor of Law*
A.B. 1943, Ohio Wesleyan University; LL.B. 1948, Western Reserve University

HENRY WEIHOFEN, *Visiting Professor of Law*
Ph.B. 1926, J.D. 1928, J.S.D. 1930, University of Chicago

GLEN EARL WESTON, *Professor of Law*
B.S. 1943, University of Maryland; LL.B. 1948, The George Washington University
CHARLES JAMES ZINN, *Professorial Lecturer in Law*
A.B. 1927, LL.B. 1930, Fordham University; LL.M. 1951, S.J.D. 1954, Georgetown University

ASSISTANTS

RICHARD WARREN METZ, *Teaching Fellow*
A.B. 1959, Westminster College; LL.B. 1962, Duke University
JOHN BERNARD TACKE, *Teaching Fellow*
A.B. 1956, St. Edward's Seminary; Ph.L. 1958, Gregorian University; LL.B. 1963, The George Washington University*

ADMINISTRATIVE ASSISTANTS

Isabel Robinson Bilisoly, A.B., *Recording Secretary in the Law School*
Samuella Jerman Palmer, B.S., *Secretary to the Dean of the Law School*
Beverly Ann Benjamin, *Secretary to the Dean of the Graduate School of Public Law*
Judith Jane Clopton, *Secretary to the Dean of the National Law Center*
Ellen Rose Thompson, *Clerk-Typist*
Sarah Newport Willett, Mus.B., *Secretary in the Law School*
Marlene Delores Collins, *Secretary in the Law School*
Phyllis Sue Hurley, *Secretary in the Law School*
Dorothe Walsh Farquhar, *Editorial and Business Secretary of The George Washington Law Review*
Vera Taborsky, A.B., *Professional Assistant, Law Library*
Bertha Torquemada, *Assistant, Law Library*
Gary William Schenk, *Assistant, Law Library*

* Degree requirements completed July 1962.

THE LAW SCHOOL

HISTORY OF THE LAW SCHOOL

The Law School, the oldest in the District of Columbia, was established in 1865 with a formal program of two years of study. This was largely through the efforts of the Reverend George Whitefield Samson, President of Columbian College, whose action resulted in the purchase of a separate building for holding law classes. This building had belonged to Trinity Church of which Francis Scott Key had been Senior Warden. It was occupied by the Law School until 1884.

Sixty graduates, from twenty-two of the then thirty-seven states, received degrees in 1867. The School continued to have a student body and a faculty which reflected the fact that it was at the seat of our nation's government. Associate Justices David J. Brewer and John Marshall Harlan of the Supreme Court of the United States were among the prominent members of the bench and bar who served as lecturers.

In 1877, one year after the first such program was adopted in the United States, the Law School instituted a course leading to the degree of Master of Laws. In 1898 the course of instruction for the degree of Bachelor of Laws was extended to three years. The School took part in 1900 in the organization of the Association of American Law Schools. Later women students were admitted and in 1916 the first woman to take a regular course in law was graduated.

The Law School moved into its present quarters in 1925, marking the occasion with a dedicatory address by Dean Roscoe Pound. The building, Stockton Hall, is named for Rear Admiral Charles H. Stockton, President of the University from 1910 to 1917.

In the past quarter-century the Law School has developed its course and seminar offerings with consideration for the needs of first-degree and graduate students. The degree of Doctor of Juridical Science was instituted in 1940. The needs of foreign lawyers who come to this country and who require additional preparation for law work in the United States resulted in the creation of programs for the degrees of Master of Comparative Law in 1946 and Master of Comparative Law (American Practice) in 1951.

National University, which had had an important place in legal education in the District of Columbia since 1869, was merged in The George Washington University in August 1954.

Programs of special research and study, such as the independent Patent, Trade-Mark, and Copyright Foundation, give richness to the basic curriculum of the Law School.

After years of planning, the National Law Center of The George Washington University, including the Law School and the graduate School of Public Law, was established in 1959.

LOCATION IN THE NATION'S CAPITAL

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate

courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, and the Tax Court of the United States. Current federal legislation can be studied as it is considered by Congressional committees and as it comes up for debate on the floors of the House of Representatives and the Senate. With respect to the federal administrative agencies, students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations located in Washington. The notable library of the Carnegie Foundation for International Peace has been acquired by The George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World".

The years of residence at law school are years of participation in the life of the community, which in the case of The George Washington University Law School, is the government of the United States. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized, and whatever the community in which the student plans to practice.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School conducts (1) a program of study in preparation for the practice of law, whether it be general practice, specialized practice, or government service; (2) the publication of a law journal containing the results of research in public law; and (3) a series of student professional co-curricular activities. The Graduate School of Public Law supplements this program with study and research on the graduate level for foreign as well as for American students and with a continuing legal education program for members of the bar.

THE BACHELOR OF LAWS PROGRAM

The wide geographical distribution of the students who come to the Nation's Capital to study law (see Summaries of Registration, page 63) makes for a truly national law school. Students from almost every state in the Union here join students from several foreign countries in their legal training. Last year over 320 colleges and universities were represented. The basic curriculum leading to the Bachelor of Laws

degree is addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. It includes, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the understanding and technique of their use. It also includes the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial and appellate practice; and, through the medium of seminars, experience in group handling of legal problems.

ENTRANCE REQUIREMENTS

For the Degree of Bachelor of Laws.—A Bachelor of Arts or equivalent degree from an accredited college or university; a satisfactory quality of work; and an acceptable distribution of courses are required. Eligibility is based on personal and scholastic records and on the result of the Law School Admission Test. No applicant will be accepted who is ineligible to return in good standing to a previously attended law school. From the applicants, a selection is made by the Committee on Admissions.

Information concerning the Law School Admission Test may be obtained from the Dean of the Law School or from the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. The test is administered at various centers of the United States in February, April, August, and November each year. Completed application blanks and fees must be received by the Educational Testing Service at least two weeks before the date of the test. It is not necessary that formal application for admission to the Law School be made prior to taking the test.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws is granted for work successfully completed in other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association. Transferred credits will not be recognized in excess of those which might be earned in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

UNCLASSIFIED STUDENTS

A degree candidate with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student to earn credits for transfer to the other law school.

REQUIREMENTS FOR THE DEGREES*

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and 80 semester hours of required and elective courses, with a

* The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at The George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four

cumulative average of at least 65. At least one academic year of residence and 28 semester hours are required of students admitted with advanced standing. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

The degree of Bachelor of Laws "with distinction" is awarded students who obtain a minimum cumulative average of 85.

Graduation Requirements.—See page 30 for a statement of the graduation requirements.

RESIDENCE

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the day division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a day student must attend 6 semesters to meet residence requirements, an evening student must attend 8. Students authorized to take schedules of less than 10 hours in the day division or less than 6 hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit. For details, see page 23.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed to assure coverage of the basic courses and allow a degree of flexibility to meet the diverse interests of students. All first-year courses, four second-year courses, and one third-year course are required, leaving a total of 35 hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law. It is important that students plan ahead regarding their electives.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the course in Appellate Practice and Procedure and the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Patent Law, Patent Office Practice, Patent Trial Practice Court, and Federal Antitrust Laws. Additional courses recommended are Advanced Topics in Patent Law and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester.

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years for evening students); (2) 80 semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law I, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty. All requirements for the degree must be completed at this Law School.

This degree is available only to students who entered the Law School prior to September 1961.

Day Division

First Year

Fall Semester	Semester Hours
Contracts I	4
Legal Method and Legal System	4
Personal Property	2
Torts	4
Total	14

Spring Semester	Semester Hours
Constitutional Law	4
Contracts II	2
Criminal Law and Procedure	4
Real Property	4
Total	14

Second Year

Fall Semester	Semester Hours
Civil Procedure	4
Conveyances	2
Electives	8
Total	14

Spring Semester	Semester Hours
Administrative Law	3
Evidence	4
Electives	7
Total	14

Third Year

Fall Semester	Semester Hours
Trial Practice Court	2
Electives	10
Total	12

Spring Semester	Semester Hours
Trial Practice Court	2
Electives	10
Total	12

Evening Division

First Year

Fall Semester	Semester Hours
Contracts I	4
Legal Method and Legal System	4
Personal Property	2
Total	10

Spring Semester	Semester Hours
Contracts II	2
Criminal Law and Procedure	4
Torts	4
Total	10

Second Year

Fall Semester	Semester Hours
Civil Procedure	4
Real Property	4
Electives	2
Total	10

Spring Semester	Semester Hours
Constitutional Law	4
Conveyances	2
Electives	4
Total	10

Third Year

Fall Semester	Semester Hours
Administrative Law	3
Electives	7
Total	10

Spring Semester	Semester Hours
Evidence	4
Electives	6
Total	10

Fourth Year

Fall Semester	Semester Hours
Trial Practice Court	2
Electives	8
Total	10

Spring Semester	Semester Hours
Trial Practice Court	2
Electives	8
Total	10

THE GRADUATE SCHOOL OF PUBLIC LAW*

FACULTY AND STAFF OF INSTRUCTION†

L. H. Mayo, *Dean*

Professors J. F. Davison, R. G. Dixon, Jr., Robert Kramer, L. H. Mayo, L. S. Merrifield, A. S. Miller, C. B. Nutting, G. E. Weston
Professorial Lecturers M. F. Cohen, L. J. Harris, Murdock Head, J. A. McIntire, Lester Nurick, W. S. Surrey
Associate Professor R. C. Nash, Jr.
Associate Professorial Lecturers H. P. Green, H. J. Liebeany
Lecturers W. W. Goodrich, A. H. Kaplan, Raymond Kellam, Alfred Letzler, Bernard Ramundo

HISTORY

The general concept of a graduate school of public law in the City of Washington goes back at least as far as World War II, when a group of law teachers then in government service discussed the matter on several occasions. The idea was revived some years later when the Trustees of The George Washington University adopted a resolution commending "the Law Center as being worthy of the strong support of the entire University . . . and of all those who believe that the Law Center offers an opportunity for service of the highest order." During succeeding years the concept was further refined and it was determined that the Center should include a Graduate School of Public Law with its own dean and faculty. In 1959 the Trustees established the School.

OBJECTIVES

The Graduate School of Public Law has two basic objectives: (1) *to improve the quality of the educational process* by which lawyers are trained to cope with the increasingly complex problems of public law, including government-industry relationships and international affairs, and (2) *to serve as an independent analysis center* for the purpose of examining and evaluating selected legal-policy issues of significant contemporary and long range interest. The first objective is implemented primarily through the graduate curriculum of courses and seminars while the second is achieved through continuing research study projects. Both of these objectives are covered in the semi-autonomous programs, such as that in Government Contracts.

PROGRAMS OF STUDY

DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized

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* The President of the University, the Dean of Faculties of the University, the Assistant Dean for Development in the National Law Center, the Registrar of the University, the Director of Admissions of the University, Professors, and Associate Professors constitute the Faculty.
† For the academic year 1962–63.

fields. Graduate instruction, leading to the degree of Master of Laws enables qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as day students for the convenience of lawyers in private practice and in government service.

CONTINUING LEGAL EDUCATION

An important part of the graduate program is the offering of courses in various fields of the law for members of the bar not interested in degree candidacy but desirous of keeping abreast of current developments. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as Continuing Legal Education students.

PROGRAMS FOR FOREIGN LAWYERS

To meet the needs of lawyers from countries whose legal systems are not based on the English law, the Law School provides two additional programs of study. For those who wish to acquire an understanding of our system which will permit them to work with its materials and practitioners after returning to their own countries, the program for the degree of Master of Comparative Law permits a selection of regular courses taken with undergraduate and graduate students. Foreign lawyers who wish to practice in a common law jurisdiction may enroll in the program for the degree of Master of Comparative Law (American Practice), a more intensive program of courses appropriate to this goal.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty of the Graduate School of Public Law. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party; and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for graduate degrees and specially qualified seniors may pursue this work.

ENTRANCE REQUIREMENTS

Candidates for graduate degrees must be accepted by the Faculty of the Graduate School of Public Law.

For the Degree of Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university* and a Bachelor of Laws or equivalent degree from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that at the discretion of the Faculty applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law or

* The Dean is authorized to make exceptions in appropriate cases.

for credits earned at another law school. Credits earned as an unclassified student will not be applicable toward meeting the requirements for the degree unless specific provision therefor is included in the letter of admission.

For the Degree of Master of Comparative Law and *Master of Comparative Law (American Practice).*—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or licco; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

For the Degree of Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university*; a Bachelor of Laws or equivalent degree, earned with high rank, from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association; and outstanding capacity for scholarly work in the field of law.

UNCLASSIFIED STUDENTS

A member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools or a law school approved by the American Bar Association may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this School.

CONTINUING LEGAL EDUCATION STUDENTS

A simplified admission and registration procedure is used for members of the bar who desire to take courses on a noncredit basis. Continuing Legal Education students may not participate in student activities or benefit from the medical privileges of the University.

REQUIREMENTS FOR THE DEGREES

MASTER OF LAWS

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of 75, 20 semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases second- and third-year courses may be approved for inclusion in the program of study if not previously taken.

MASTER OF COMPARATIVE LAW

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily 24 semester hours in approved courses in the curriculum of the School or of such other departments of the University as the Faculty of the School shall approve.

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

The degree of Master of Comparative Law, American Practice (M.Comp.L.(Am. Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed 28 semester hours in approved courses in the curriculum of the School with a cumulative average of at least 65.

DOCTOR OF JURIDICAL SCIENCE

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Faculty of the Graduate School of Public Law. At the conclusion of his first year of residence, or at such other time as the Faculty may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination is conducted by the consultative committee and such other members of the Faculty and qualified experts as are selected by the Faculty.

No later than the date specified in the University calendar the candidate must submit to the Dean of the Graduate School of Public Law three complete copies of the dissertation together with a fourth copy of the summary. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the dissertation, which are rigidly enforced. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Dean.

The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

GENERAL INFORMATION

ENTERING CLASSES

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, but not at the beginning of the summer term.

DAY AND EVENING DIVISIONS

Most day classes meet for fifty-minute periods between 9:10 A.M. and 1:00 P.M., Monday through Friday; Trial Practice Court meets for two-hour periods on Saturday morning.

Evening classes meet for two fifty-minute periods from 5:50 to 7:40 P.M., Monday through Friday. A four-credit course, e.g., Torts, meets two evenings a week; a three-credit course, e.g., Administrative Law, meets two evenings a week for one half the semester and one evening for the other half; a two-credit course, e.g., Personal Property, meets one evening a week. The evening division conforms to the standards of the day division, the full-time faculty participating in the instruction.

SUMMER TERM

A term of two sessions, with day and evening classes, is offered in the summer. Continuing students and transfer students may register for either or both sessions. *No beginning students are admitted to the summer term.*

The summer term is shorter than a semester of the academic year, and, as a consequence, a student must attend two and one-half summer terms to receive residence for one academic year or attend one and one-half summer terms to receive residence for a semester.

A maximum of 6 semester hours may be taken each session by day students. Day students receive four-tenths of a semester of residence credit for each session of the summer term in which they are registered for 3 or more semester hours. A maximum of 4 semester hours may be taken each session by evening students. Evening students receive three-tenths of a semester of residence credit for each session of the summer term in which they are registered for 2 or more semester hours.

Summer students planning to take the New York bar examination must register at the beginning of the term for both sessions and must complete both and carry a program of at least ten classroom periods a week for day students and at least eight classroom periods a week for evening students.

THE LIBRARY

The Law Library of 60,000 volumes contains the official reports of the decisions of the courts of last resort of all states but one prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases;

FEES AND FINANCIAL REGULATIONS

Application fee (degree candidate), nonrefundable	$15.00
Application fee (unclassified student), nonrefundable	5.00
Tuition Fees	
Full-time program (11 hours or more), each semester	450.00
Part-time program, each semester hour	33.00
Doctor of Juridical Science, including the final examination	1,100.00
Special fee, Law School (Student Bar Association activities, *Law Review*, and other services), charged each student in the Law School for each semester or any part thereof except summer term	10.00 25.00 85.00
Graduation fee	5.00
Fee for printing summary of doctoral dissertation	5.00
Fee for special examinations, for each subject	
Late-registration fee, for failure to register within the designated period	2.00
Change fee, for each change in program involving one course or more than one course	
Residence fee, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements*. Due and payable on the official days of registration	33.00 2.00 5.00
Service fee, for late payment of tuition, see "Payment of Fees"	
Reinstatement fee, for reinstatement after financial suspension	

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under "Health Administration", pages 34–35. These privileges, however, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

Subject to the approval of the Treasurer, a student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day† in November; one-third on the first working day† in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day† in March; one-third on the first working day† in April.

A student who fails to meet payments when due but who pays his fees on or before the fifteenth of the month in which payment is due is charged a service fee of $2. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated

* Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

† The University work week is Monday through Friday, inclusive.

for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

In no case will a refund be made of the first third of the total tuition charges. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

* The University work week is Monday through Friday, inclusive.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, LOAN FUNDS

Law School Research Assistantships.—Available each year to students currently enrolled in the Law School, preferably to applicants who are completing the second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Graduate School of Public Law Teaching Fellowships.—Available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first-year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Graduate School of Public Law not later than March 15.

Thomas Alva Edison Fellowship (1961).—Established through the Patent, Trade-Mark, and Copyright Foundation in the amount of $3,000, this fellowship is awarded annually to a University graduate student who will be expected to follow a program of research approved by a member of the Foundation research staff. Candidates must be qualified to undertake study on the U. S. patent and related systems, and shall be nominated by the University's Patent, Trade-Mark, and Copyright Foundation.

Mary Covington Memorial Scholarship (1961).—Established by Mary S. English in memory of her aunt, Mary Covington, LL.B. 1922, provides tuition aid to a deserving evening student in the Law School on the basis of scholastic achievement in the first-year course.

Charles Worthington Dorsey Memorial Scholarship (1947).—Memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82. A full-tuition scholarship for the course leading to the degree of Bachelor of Laws, awarded to a needy and promising graduate of this University with a Bachelor of Arts or equivalent degree. The scholarship is awarded ordinarily once every three years.

Law School Scholarships.—Available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-year tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leardership in addition to scholastic attainment. To retain the scholarship, the successful candidates must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Tuition scholarships are also available to continuing second- and third-year full-time students with averages of 75 and above. Applications should be made to the Dean of the Law School prior to July 1. Scholarships are awarded after spring semester grades are reported.

Phi Delta Delta Scholarships (1959).—Zeta Chapter of Phi Delta Delta Legal Fraternity (International), provides tuition aid to a woman student in the second year of the Law School, who excelled in scholastic achievement and service to the Law School in her first year.

Charles Glover Prize.—Established by Charles Carroll Glover, Jr., a Trustee of the University, in memory of his great-grandfather, an illustrious member of the bar of the District of Columbia. Consists of selected law books. Awarded annually to the

student in the Law School who has attained the highest average grade in the third-year, full-time course.

Kappa Beta Pi Prize.—A copy of Blackstone's *Commentaries* or a legal dictionary awarded annually by Eta Alumnae Chapter to the woman law student who attains the highest average for the freshman year.

John Bell Larner Prize.—By bequest, a medal is awarded annually to the member of the graduating class in the Law School who attains the highest average grade in the entire course for the degree of Bachelor of Laws or Juris Doctor.

Lawyers Title Award.—A $100 prize established by the Lawyers Title Insurance Corporation is awarded annually to a graduating senior for excellence in the law of real property.

John Ordronaux Prizes.—By bequest, $75 is awarded annually to the student who has attained the highest average grade in the first-year, full-time course; and $75 to the student who has attained the highest average grade in the second-year, full-time course.

Loan Funds.—Through the generosity of friends of the University a number of loan funds are available to students in the Law School. Among them are the Law Association Loan Fund, the Class of 1912 Loan Fund, the Class of 1937 Loan Fund, the Robert M. and Mary McConnel Cooper Loan Fund, and the Jephson Educational Trust Loan Fund. Applications for loans should be made in the Office of the Dean.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

REGULATIONS

AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of 14 hours a week. Such students may take courses in the evening only if they are not available in the daytime and if a majority of the hours taken are in day courses. Students with 20 hours or more of outside employment whether in the day or evening division, must take a limited program of studies not exceeding 10 hours a week. Students taking a majority of their classes in the evening may not take more than 10 hours a week; the minimum load is 8 hours, except in special cases where 6 may be approved for a limited time. A minimum schedule of 10 hours in the day division is required except in exceptional circumstances when a reduced program is authorized by the Dean for continuing students.

ATTENDANCE

Regular attendence at classes is required and is necessary for successful work. A student who is deficient in class attendence in any course may be barred from taking the examination, and the course must be repeated.

CHANGES IN PROGRAM OF STUDIES

A student may not drop or add courses or change from one section to another of the same course without the approval of the Dean.

SUMMER SCHOOL CREDIT

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a simular period in this School.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a person who does not have a clear financial record.

GRADUATION REQUIREMENTS

Application for Graduation.—It is the student's responsibility to file an application for graduation in the Office of the Registrar at the time of registration for the last semester of the senior or final year. Students expecting to complete, during the Summer Sessions, requirements for degrees to be formally conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Degree Requirements.—The student must meet the curriculum, scholarship, and residence requirements of the degree for which he is registered.

In Residence Status.—A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his readmission, unless during his absence he maintains "in residence" status by paying the residence fee, see page 26.

A student who has completed tuition requirements, but whose graduation is deferred for any reason must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

Graduation in Absentia.—Application for graduation *in absentia* must be submitted to the Dean.

RESEARCH PAPER IN LIEU OF EXAMINATION

The preparation of a research paper is required in lieu of an examination in the seminars and in some courses, as indicated in the course descriptions by (RP). In general, a qualified first-degree student may register for one such course; in special cases he may register for two, as for *Current Decisions* and one other.

EXAMINATIONS

Written examinations are held at the end of most courses. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. An entry of *I*, incomplete, will be made on the record of a student thus excused. To receive credit for the course, he must take the next regularly scheduled examination. The examination may not be taken after exclusion for low scholarship.

Permission to take an examination before the regularly scheduled date will not be granted. Permission to take a postponed examination is limited to the situation provided for in the preceding paragraph.

A special examination will be granted only to a student entitled to take a postponed examination, who is a candidate for a degree to be conferred at a convocation which precedes the next regular examination in the subject. Written application, showing sufficient cause, should be addressed to the Dean, and approval will be granted at the discretion of the Faculty.

If a student fails to take an examination, a grade of zero will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

GRADES

Grades are given in numerical terms which are equivalent to letter grades according to the following scale: 85–100, *A*, excellent; 75–84, *B*, good; 65–74, *C*, satisfactory; 55–64, *D*, poor—below standard for graduation; below 55, *F*, failure. A student who has been excused from failure to take a regularly scheduled examination is given the grade of *I*, incomplete, and a student who has been barred from taking an examination because of excessive absences is given the grade of *EA*. See "Examinations" above, for grade upon failure to take an examination. Grades between 65 and 100 indicate that the work has been completed and credit given for the courses. Grades between 55 and 64, however, do not represent satisfactory work and adversely affect a student's cumulative average. No credit is given for grades below 55.

A student may not repeat a course he has failed, except by permission of the Faculty.

The cumulative average of a student includes all grades in all courses taken while he is a candidate for a particular degree. When a course is repeated, both the first grade and the subsequent grade or grades are counted in the cumulative average.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student will be excluded who fails in courses aggregating 8 or more semester hours in one semester or in two successive semesters, or who fails in courses aggregating 10 or more semester hours during his period of law study. A student subject to exclusion under this provision who is currently registered will be permitted to complete the work of the semester.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least 65 will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below 65, receive grades sufficient to give him a cumulative average of at least 65, he will be excluded. If a student on probation attains a cumulative average of at least 65 by the grades received during the semester his status will then become clear. A maximum of three semesters of probation is allowed. Thus, if a student whose status has become clear after two semesters of probation subsequently goes on probation, he will be allowed only one semester of probation in which to raise his average to at least 65.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he

has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the cumulative average.

If the student suspended for academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the cumulative average.

CLASSIFICATION OF STUDENTS

Candidates for the degree of Bachelor of Laws are divided into classes on the completion of semester hours as follows: (1) full-time students: first year, 1–28; second year, 29–56; third year, 57 or more; (2) part-time students: first year, 1–20; second year, 21–40; third year, 41–60; fourth year, 61 or more.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RIGHT TO DISMISS STUDENTS

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration.

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

STUDENT ACTIVITIES AND SERVICES

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law. The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

The Legal Aid Program is under the joint sponsorship of The George Washington University Student Bar Association and the Junior Bar Section of the District of Columbia Bar Association. Participating students assist court-appointed attorneys in the preparation of cases for trial or appeal. Qualified second- and third-year students are eligible for participation in the program.

In the ranking of member associations by the American Law Student Association, The George Washington University Student Bar Association has received first place twice and second place twice in past years.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

LIVING ACCOMMODATIONS

The University maintains seven attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall and spring semesters or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Director of Activities for Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1962–63 are as follows:

	Academic Year	
Residence Halls for Men	*Double*	*Triple*
John Quincy Adams Hall	.....	$345
John C. Calhoun Hall	$380	.....
James C. Welling Hall (Limited space available)	300	.....
Residence Halls for Women	*Single*	*Double*
William H. Crawford Hall	.....	$405
Hancock Hall	$535	405
Dolly Madison Hall	.....	405
Hattie M. Strong Hall	470	405

Forms for applications, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW., or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

STUDENT EMPLOYMENT

The Law School takes a continuing interest in the placement of its students and maintains a limited placement service for that purpose. In addition, the University Placement Office, 2114 G Street NW., provides assistance to students seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

A day student taking the regular program (more than ten hours) must limit outside employment to less than twenty hours. (See "Amount of Work" page 29.) It is urged that day students refrain from engaging in outside employment during their first semester or first year in Law School. Although work in some special areas may contribute to the learning and experience of the student, as a general rule it will compete with time needed for adequate study and preparation, which are at the heart of a good legal education. The evening program is planned to provide a desirable reconciliation of these competing considerations but results in a more demanding schedule for the student.

HEALTH ADMINISTRATION

The Health Administration Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Administration, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education; (2) three visits in any one illness by a member of the Health Administration Staff, office or residence (District of Colum-

bia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration*. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of physical education.

* See Rule (5) for exceptions.

COURSES OF INSTRUCTION

IN THE LAW SCHOOL AND THE GRADUATE SCHOOL OF PUBLIC LAW

The courses of instruction listed below are subject to change. The University reserves the right to withdraw any course announced.

First-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

The number of hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving two hours of credit each semester is marked (2–2), and a semester course giving two hours of credit is marked (2).

Courses and seminars marked (RP) require the preparation of a research paper in lieu of an examination.

Day classes begin at 9:10 A.M. Evening classes begin at 5:50 P.M.

Specially qualified third-year students may secure approval to take graduate courses and research in public law.

In appropriate cases Master of Laws candidates may take second- and third-year courses not previously taken.

FIRST YEAR

110 *Constitutional Law* (4) Mayo, Dixon, Miller

Basic principles of American constitutionalism; judicial function in constitutional cases; implementation of doctrines of separation of powers, federalism, limited government; development and exercise of national powers; introduction to civil rights and liberties. (Spring—day and evening.)

115–16 *Contracts I-II* (4–2) Miller, Freedman, Schiller

Legal remedies of contracting parties, including damages in contract and quasi-contract, specific performance, reformation, rescission, and remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, and problems of proof; the function of consideration; conditions; assignments; third-party beneficiaries; the effect of changed circumstances; and protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, and adversary method. (Academic year—day and evening; summer 1963.)

125 *Criminal Law and Procedure* (4) Cooper, Sullivan, D. Green

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. (Spring—day and evening.)

135 *Legal Method and Legal System* (4) Fryer, Benson, Davison, Goldsborough

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards. (Fall and spring—day and evening.)

145 *Personal Property* (2) Fryer, Mallison, Sullivan, Law, Manne

Concepts, meanings of term "possession", methods of acquiring ownership, problems in bailment cases, basic principles of liens and pledges. (Fall and spring—day and evening.)

150 *Real Property* (4)

Benson, Walburn, Sullivan

Historical background of the law of estates and conveyancing; types of estates; dower and curtesy; landlord and tenant relationship; concurrent estates; future interests at common law and after the Statute of Uses; the Rule Against Perpetuities; incidents of divided ownership, as waste; natural rights. (Fall—evening; spring—day; summer 1963.)

160 *Torts* (4)

Merrifield, Seidelson, Sharpe, Schiller

Liability for harm to others: intentional misconduct; the law of negligence, including consideration of fault and appropriate distribution to risk-costs as bases of liability; comparison of liability for physical harm with liability for mental and economic harm. (Fall—day; spring—day and evening.)

SECOND YEAR

201 *Agency* (2)

Cooper, Freedman

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification. (Fall—day and evening; summer 1963.)

202 *Administrative Law* (3)

Davison

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. (Spring—day and evening; summer 1963.)

205 *Appellate Practice and Procedure* (2)

Freedman

Appellate practice and procedure will be studied through texts; consultation with appellate judges and law clerks and with attorneys who have cases pending on appeal; observation of arguments in the United States Supreme Court and the Court of Appeals for the District of Columbia Circuit; and analysis of records, briefs, and oral arguments in actual and in moot cases. Each student will brief and argue one advanced-level moot case and will prepare one moot court record for use in first-year Case Club. Students taking this course will take only two hours of Trial Practice Court. Admission by permission of the instructor. (Spring—day and evening.)

210 *Business Associations* (4)

Kirkpatrick, Manne

Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination. (Fall—day and evening.)

215 *Civil Procedure* (4)

Walburn, D. Green, Law

The mechanics of litigation—the rules which govern the process by which the rights and duties studied in substantive law courses are enforced: pleadings, discovery, pre- and post trial motions, jurisdiction and venue, equity jurisdiction and trial by jury, former adjudication. Emphasis is on the Federal Rules of Civil Procedure but the principles and main problems indigenous to all procedural systems are developed. (Fall—day and evening; summer 1963.)

219 *Commercial and Investment Paper* (3)

Ledakis

Bills of exchange, promissory notes, checks, bonds, certificates of stock, and other forms of commercial and investment paper in the context of their business function and legal setting under the common law and uniform laws, including the proposed Uniform Commercial Code. (Fall—day and evening; summer 1963.)

224 *Sales and Sales Financing* (3)

Ledakis, Manne

The law relating to the sale and distribution of goods and to the security financing devices utilized in this connection, with particular attention to the effect of existing and proposed uniform laws. (Spring—day and evening.)

230 *Conveyances* (2)

Schiller

Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user; zoning and other land controls. (Fall—day and evening; spring—evening; summer 1963.)

235 *Domestic Relations* (2) Potts, Seidelson
Marriage, annulment, and divorce; adoption and custody of children; economic relations. (Fall—evening; spring—day and evening; summer 1963.)

238 *Equity* (2) Sullivan
A correlation of aspects of equity considered in earlier courses, and inquiring into the nature of equity jurisprudence through analysis of selected problems in equity: historical development of equity, including problems of merger of law and equity; use of equity jurisdiction offensively and defensively, including multi-party actions, injunction of executive and legal actions, and equitable abstention; emphasis on the fashioning of equitable remedies. (Spring—day and evening; summer 1963.)

240 *Evidence* (4) Fryer, Sullivan
Preparation and presentation of evidence, including proof of writings; qualification and examination of witnesses with emphasis on impeachment; privilege; opinion testimony; determination of relevancy; demonstrative, experimental, and scientific evidence; application of the hearsay rule. (Spring—day and evening; summer 1963.)

243 *Federal Jurisdiction* (2) Cooper, Freedman
Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts. (Fall—day and evening; summer 1963.)

251 *Insurance* (2) Schiller
A primary risk distributing medium and the rules by which legislative, administrative, and judicial bodies seek to promote its benefits and avert its dangers. Includes insurance marketing, insurable interest, subrogation, transfer of insurance benefits to non-policyholders, coverage and other insurance policy provisions, disposition of claims. (Summer 1963.)

254 *International Law and World Order* (3) Mallison
Traditional content of course in international law presented in context of values and institutions of the world community; formal prescription and effective practice concerning participants in decision-making processes; roles of individuals, international public organizations, political parties, pressure groups, private associations, and national states; analysis of range of available sanctions; the roles and effects of international agreements under the United States Constitution. (Fall—day and evening.)

259 *Labor Law* (3) Merrifield
Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations. (Spring—day and evening.)

265 *Law and Accounting* (2) S. Cohen
Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items on financial statements of corporations; inventory adjustments; corporate transactions, distributions, and capital adjustments. (Spring—evening.)

270 *Legislation* (2) Nutting, Mallison
The legislative process and roles of various participants in the process; operation of the United States Congress and state legislatures, including fact finding, organization, and procedure; problems of statutory interpretation. (Fall—evening; spring—day; summer 1963.)

274 *Taxation—Federal Estate and Gift* (2) Kramer, Hambrick
A survey of the substantive provisions of the federal estate and gift tax laws, including inter vivos transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, the marital deduction and split gifts; tax procedure. (Fall—evening; spring—day.)

279 *Taxation—Federal Income I* (3) Hambrick, Weaver
Survey of substantive provisions of federal income tax, including concept of gross income, provisions affecting taxation of the family and individual transactions, limitations

on allowable deductions, sales and dispositions of property, problems of capital gains taxation, and nontaxable exchanges. (Fall—day and evening; summer 1963.)

280 *Taxation—Federal Income II* (2) Hambrick

Survey of substantive provisions of federal income tax with respect to tax accounting, estates and trusts, and partnerships. Prerequisite: Law 279. (Spring—day and evening.)

285–86 *Trusts and Estates I-II* (3–3) Weaver, Law

An integrated view of considerations (other than tax) in noncommercial transfers of wealth at death or during life with emphasis on the drafting of documents best suited to achieve the wishes of the property owner and meet the needs of his family. *First half:* distribution and administration of intestate estates; formal requirements for execution of wills and trusts; revocation and alteration; grounds for contest; limits on testamentary freedom. *Second half:* dispositive provisions in wills and trusts; common problems of construction; future interests questions including class gifts, powers of appointment, and limits imposed by Rule Against Perpetuities, etc.; problems of administration of estates and trusts including allocations to principal or income, investments, powers to manage, sell, etc.; charitable trusts. Supervised practice in drafting is included. Prerequisite to Law 285: Law 150; to Law 286: Law 285. (Academic year—day and evening; summer 1963.)

295 *Unfair Trade Practices* (3) Weston

Unfair trade practices at common law and under statutes; trade marks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; state sales-below-cost statutes; Robinson-Patman Price Discrimination Act; miscellaneous business practices. (Fall—day and evening; summer 1963.)

THIRD YEAR

302 *Admiralty* (2) Sharpe

Sources and characteristics of the maritime law of the United States, jurisdiction of federal and state courts, personal injury and death questions peculiar to seamen and maritime workers, collision, limitation of liability. (Fall—evening.)

307 *Comparative Law* (3) Davison

The Civil Law System; general introduction to foreign law as exemplified by Roman Law and the French and German Civil Codes; comparative study of administration of justice and legal institutions. This course deals with delictual and contractual obligations. (Fall—evening.)

309 *Conflict of Laws* (3) Dixon, Seidelson

Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, and business associations. (Fall—day and evening; summer 1963.)

311 *Copyright Law* (2) Cary

Historical background; formalities and essentials in securing a copyright; subject matter of copyright; remedies; international aspects of copyright under Berne Union, Universal Copyright Convention, and Inter-American Convention; copyright licensing and performing right societies. (Spring—evening.)

313 *Constitutional Interpretations* (2) Dixon

Advanced course in constitutional law. The Constitution and constitutional tradition, process of judicial decision-making, significance of "due process", current constitutional developments, adequacy of the traditional system of powers and limitations, introduction to comparative constitutional law. (Not offered 1963–64.)

318 *Creditors' Rights* (3) Kirkpatrick, Law

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration. (Spring—day and evening.)

321–22 *Current Decisions* (2–2) Seidelson
Required of, and limited to, members of the student staff of the *Law Review*. (RP) (Academic year—day and evening.)

330 *Federal Antitrust Laws* (3) Weston, Kirkpatrick
Restraints of trade at common law and under Sherman Antitrust Act of 1890, Federal Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreements, trade associations, exclusive-dealing agreements, tie in sales, and trade boycotts; patents and copyrights under antitrust laws. (Spring—day and evening; summer 1963.)

335 *Jurisprudence* (2) Mayo, Kramer
Basic jurisprudential concepts; the nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, and functional; law and logic; law and justice; the judicial process; legislative, executive, and administrative decision-making; the impact of politics, economics, and scientific advance on legal systems; contemporary trends in jurisprudential thought. (Fall—evening; spring—day.)

339 *Collective Bargaining and Labor Arbitration* (2) Merrifield
The collective labor agreement: its content, negotiation, and administration through the grievance procedure and arbitration; problems in the settlement of labor disputes. (Not offered 1963–64.)

341 *Labor Standards and Social Security Legislation* (2) Merrifield
Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age. (Fall—evening.)

345 *Legislative Drafting* (2) Zinn
Advanced instruction and practice in legislative drafting. (RP) (Fall—evening.)

349 *Local Government Law* (2) Mallison
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development; responsibility in tort. (Spring—evening.)

359 *Patent Law** (2) Robillard
Origin and nature of patents, patentable subject matter, classes of patents, novelty, utility, invention, patent claims and their interpretation, acts constituting infringement, correction of patents. (Fall - evening; summer 1963.)

360 *Advanced Topics in Patent Law* (2) Harris
Lectures and discussion; licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; the role of patents in business; economic and social functions of patents, trade-marks, and copyrights. Prerequisite: Law 359. (RP) (Spring—evening.)

362 *Patent Office Practice** (2) Rose
United States Patent Office rules and practice; appeal and interference procedure. (Spring—evening.)

365–66 *Patent Trial Practice Court** (2–2) Brown, Rinel
Practice before the United States Court of Customs and Patent Appeals and the federal courts. Prerequisite: forty-two semester hours, including Law 215 and 240. Law 359, which is also required, may be taken concurrently. *Patent Trial Practice Court* may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement. If *Patent Trial Practice Court* is started in the spring semester, Law 240 may be taken concurrently. (Academic year—evening.)

* Patent law students may take Law 359 and Law 365 concurrently in the fall semester and Law 362 and Law 366 concurrently in the spring semester.

370 *Public Utilities* (2) **Fryer, Davison**
Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations; judicial review. (Spring—evening.)

376 *Restitution* (2) **Sharpe**
Quasi-contracts, constructive trusts, rescission, and other legal and equitable remedies for restoring property and money which unjustly enriches others at the expense of volunteers, victims of misappropriation, and parties to mistaken contracts. (Spring—day and evening; summer 1963.)

378 *Security Transactions* (3) **D. Green**
Suretyship and mortgages: security interests in real and personal property, their creation, transfer, enforcement, and extinguishment; the law of suretyship, especially in the context of accommodation credit and commercial and financial practices. (Fall—day; spring—evening.)

382 *Selected Problems in the Trial of Tort Cases* (2) **Goldsborough**
For senior and graduate students and young lawyers without experience in the trial of a negligence case. Recent developments in the principal areas of negligence law; an extension of the fundamental concepts of damages and the principal aspects of settling a negligence case; the preparation and trial of a negligence case; the contemporary liability insurance policy and its impact upon tort litigation; the literature of tort law. (Fall—evening.)

385–86 *Trial Practice Court* (2–2) **Jackson, Edgerton, Herrick, Monk, Walsh, Beard, Hart, Kendrick, Skinker**
Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.
To be taken in the senior year. Prerequisite: forty-two semester hours, including Law 215 and 240. If *Trial Practice Court* is started in the spring semester, Law 240 may be taken concurrently. (Academic year—day and evening.)

391 *United Nations Constitutional Law* (2) **Mallison**
Interpretation of the law of the Charter; structure and process of decision of the United Nations—the peaceful settlement of disputes, collective security, regulation of armaments, regional arrangements, and types of functional cooperation. (Spring—evening.)

GRADUATE COURSES

401 *Administrative Law Seminar* (2) **Davison**
Group study of specific problems in administrative law. (RP) (Spring—evening.)

408 *Constitutional Law Seminar* (2) **Nutting, Dixon**
Group study of contemporary problems in constitutional law. (RP) (Spring—evening.)

412 *Use and Control of Atomic Energy and Space Technology* (2) **H. Green**
Problems resulting from the revolutionary scientific developments of recent years, as exemplified particularly by atomic energy and space activities. The impact of these advanced technologies on the law and the legal institutions established to assure their adequate control in the public interest. Laws relating to atomic energy and space. Provisions of the Atomic Energy Act and the regulations of the Atomic Energy Commission governing civilian uses of atomic energy. Patent, security, and international considerations. (RP) (Spring—evening.)

415 *Administration of Criminal Justice* (2) **Nutting**
Selected problems in the field such as arrest, police interrogation, electronic interception, discovery, and the relative positions of prosecution and defense in preparing cases. The professional responsibility of lawyers will be emphasized. (Spring—evening.)

420 *Estate Planning Seminar* (2) **Weaver**
Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems,

business interests, pension and profit-sharing arrangements. (RP) (Spring—evening.)

424 *Seminar on Evidence and Trial Practice* (2) Fryer
Consideration of selected problems involving presentation of proof under the more controversial rules of evidence. Emphasis will be placed on important rules and doctrines from the standpoint of the need for a fundamental re-examination of the law, especially as proposed by the Uniform Rules of Evidence. (RP) (Fall—evening.)

426 *Forensic Medicine* (2) Head, Sharpe
Introduction to problems created by the relationships between medicine and the law: a survey of the medical professions; medical education, specialties, ethics, and professional organizations; an outline of hospital organization and facilities; selected studies in the analysis and presentation of medical aspects of legal controversies, as in personal injury litigation, workmen's compensation claims, and disputes over mental capacity, both civil and criminal; the lawyer's role in domestic and international governmental activities in medicine and public health. (Fall—evening.)

428 *Food and Drug Law* (2) Goodrich, Kaplan
A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered. (Spring—evening.)

431 *Government Contracts I* (2) McIntire
A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims. (Fall—evening.)

432 *Government Contracts II* (2) McIntire
Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts; attempts at price, cost, or profit control; termination. Prerequisite: Law 431. (RP) (Spring—evening.)

436 *International Regional Organizations Seminar* (2) Miller
Legal and policy questions involved in American participation in multinational organizations, including General Agreement on Tariff and Trade, Organization for Economic Cooperation and Development, North Atlantic Treaty Organization, and Organization of American States. Concepts of sovereignty and nationalism will be studied. Special attention will be accorded the nascent "Atlantic Community." (RP) (Fall—evening.)

440 *Legal Aspects of International Business Transactions* (2) Nurick, Surrey
United States law and practice, including current antitrust and tax problems; brief comparison with the British and Civil Law systems; international law, foreign contracts, choice of law; currency considerations; effect of S.E.C. laws and regulations; international trade, including GATT and reciprocal trade arrangements; sources of finance, both United States and foreign, private and public, including international organizations; and selected case studies. In addition to the regular lecturers, there will be guest lecturers in their specialties. Prerequisite: Law 254. (Spring—evening.)

442 *Labor Law Seminar* (2) Merrifield
Group study of contemporary problems in labor law. (RP) (Fall—evening.)

449 *Law of the Near East* (2) Liebesny
A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries. (Fall—evening.)

455 *Legal Problems in Modern Methods of Warfare* (2) Mallison
The contemporary international law of war; legal aspects of modern methods of coercion (economic, political, psychological, and military); regulation of hostilities; the

special problems of atomic, bacteriological, and chemical weapons; war crimes. (RP) (Fall—evening.)

463 *Problems in Communications Law* (2) Mayo

Institutional structure of mass media; continuing adjustment between public interest goals and the competitive economic system; mass communications process and governmental function including lobbying activities; conflict between freedom of speech and of the press and other major community interests such as the right to a fair trial, protection of community moral standards, and national security; public information process; types of control exercised over newspapers, motion pictures, television, and mails by government and by private groups; comprehensive analysis of television industry and its programming operations; concept of public interest in broadcasting; international communications including the function of ITU and the prospective development of communications satellite systems. (RP) (Fall—evening.)

465 *Oil and Gas Law and Regulation* (2) Kellam

Nature of landowner's and royalty owner's interest; nature of working-interest owners' interest—the lease, its creation, interpretation, and termination; and resolution of conflicts among adjoining landowners and/or working interest owners (correlative rights). Nature and mechanics of regulation of petroleum production and oil imports; federal vs. state regulation; federal regulation of gas—FPC, its jurisdiction and impact; national fuels policy—regulation of end use, conservation of resources, and equitable distribution of market among competing fossil fuels. Unit agreements: practical bases; theory; voluntary and compulsory mechanics; and supervision, enforcement, and judicial review. (Fall—evening.)

466 *Regulation of Securities and Securities Markets* (2) Letzler

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission. (Fall—evening.)

469 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris

Registration limited to students with at least a *B* average who have taken Law 360 *Advanced Topics in Patent Law* and related courses including, as a rule, *Trade Regulation Seminar*. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

471 *Research in Public Law* (2) The Staff

Registration limited to students with at least a *B* average who have had a seminar or comparable course in field of proposed research. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Registration permitted for one semester only; work must be completed within the semester and paper submitted not later than last day of classes. (RP) (Fall and spring—as arranged.)

473 *Soviet Law* (2) Ramundo

Concept of "socialist legality"; impact of Soviet legal system upon the individual in his relationship with the state and other participants in Soviet society; role of Communist Party in the institutional framework of the Soviet legal system; Soviet philosophy of law; state (constitutional) law including Soviet federalism, governmental apparatus, and rights and obligations of citizenship; criminal law including economic crimes, role of social and public organizations in administration of justice, and concept of "administrative" punishment; property law including land tenure and personal property rights; labor law including the special role of trade unions and labor contracts; civil law including state enterprises as legal entities and the law of torts and contracts; family law; procedural law, civil, criminal, and government arbitration; and international law. (Spring—evening.)

475 *Taxation—Corporate* (2) Hambrick

Analytical study of income tax problems in corporate dividends and distributions in redemption of stock; corporate liquidations; reorganizations, mergers, and acquisitions;

recapitalizations; organization and sales of corporate businesses; collapsible corporations; carryovers. Prerequisite: Law 279. (Fall—evening.)

480 *Taxation—Oil and Gas* (2) Hambrick

Application of federal income tax to producing segment of oil and gas industry; common types of interests in producing properties; tax treatment of exploration expenditures; intensive study of problems in the deduction of intangible development and drilling costs; concept of "economic interest"—who is entitled to depletion?; tax distinctions between leasing transactions, sharing transactions, and sales of oil and gas properties and prospects; "ABC" transactions; organizational problems in oil and gas ventures- joint operating agreements, general and liquid partnerships, associations taxable as corporations and pooling arrangements; "carried interests" and other financial arrangements in development of oil and gas properties. Prerequisite: Law 279. (Not offered 1963–64.)

485 *Taxation Seminar* (2) Hambrick

Selected problems in federal income, estate and gift taxation, involving factual analysis and legal research, and the preparation of memoranda of law, legislative drafting or other appropriate disposition. Identical problems or cases will be assigned to small groups for development and disposition. Registration subject to approval of instructor. Prerequisite: Law 274, 279, and 280. (RP) (Spring—evening.)

490 *Income Taxation of Foreign Business and Investment* (2) Hambrick

The provisions and policies of the Federal Income Tax law applicable to foreign income, including considerations affecting the choice of methods of engaging in foreign business and investment, allocation of income in foreign commerce, credit for foreign taxes, principles and trends of U. S. tax treaties, including "tax sparing." The emphasis of the course is on analytical treatment of existing law and present and proposed tax policy with respect to foreign business and investment. (Fall—evening.)

492 *Trade Regulation Seminar* (2) Weston

Group study of current problems relating to unfair trade practices and federal antitrust laws. (RP) (Spring—evening.)

495 *Urban Redevelopment* (2)

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation. (Spring—evening.)

THE LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW RECORD FOR 1962-63

DEGREES CONFERRED

BACHELOR OF LAWS

FEBRUARY 22, 1962

James Leighton Bean — Ind.
B.S. in C.E. 1950, Tennessee Polytechnic Institute

Daniel Gorwin Block — Va.
B.S. 1957, Texas College of Arts and Industries

Carmen Joseph Blondin — N.J.
B.S. 1955, U. S. Coast Guard Academy

Reno Elwood Bonfanti — Pa.
A.B. 1953, University of Pittsburgh

Donald Marvin Caplan — Md.
B.S. 1954, University of Maryland

Josiah William Collins II — Ill.
B.S. 1955, U. S. Naval Academy

Richard Edward Constant — N.Y.
B.S. in E.E. 1959, University of Colorado

Roger Joseph Costello — Va.
A.B. 1948, University of Cincinnati
M.B.A. 1951, Harvard University

Samuel Parkinson Cowley, Jr. — Utah
B.S. 1950, University of Utah

Barry Shields Cramp — N.J.
A.B. 1956, Colgate University

John Preston Creer III — Utah
B.S. 1957, University of Utah

Donald James Ellingsberg — Md.
B.S. 1955, North Dakota Agricultural College

Edward Francis Gaulin — Maine
B.S. 1959, Georgetown University

Donald Edward Gillespie — Va.
B.S. 1955, Virginia Military Institute

Paul Richard Harder — Md.
B.S. 1957, Rose Polytechnic Institute

Thomas Joseph Harrigan — Va.
A.B. in Govt. 1959, The George Washington University

Leah Karstina Hendriksen — D.C.
B.S. in Ed. 1932, M.S. 1953, University of Michigan
A.M. 1959, Columbia University

Corwin Ray Horton — Oreg.
B.S. 1956, Oregon State College

Gary Lynn Jordan — Kans.
B.S. in Ch.E. 1958, University of Kansas

Donald Allen Kaul — Md.
B.M.E. 1958, Ohio State University

Samuel William Keller — Va.
B.S. 1955, University of Maryland

Helen Scrymgeour Lane — Va.
A.B. 1928, University of Michigan

Betty Jayne Lanshaw — Okla.
B.B.A. 1959, University of Oklahoma

David Ellis Leslie — Calif.
B.S. 1957, California State Polytechnic College

Floyd Stern Levison — Va.
B.S. 1955, U. S. Merchant Marine Academy

Dana Bradford Malone — Mass.
A.B. 1936, Harvard University

Sanford Astor — Md.
B.S. in Ch.E. 1958, Purdue University

William Keefe Bagwell — Va.
B.S. in I.E. 1957, West Virginia University

Charles Taylor Manatt — Iowa
B.S. 1958, Iowa State University

Melvin Leward Mariner — Md.
B.S. in Ed. 1955, M.B.A. 1957, University of Maryland

George Francis Mautz — Pa.
B.C.E. 1957, Villanova University

Michael Nicholas Meller — Va.
B.Ch.E. 1957, Pratt Institute

George Gordon Mullins — Va.
A.B. 1942, Hamline University

David Verne Mumma — D.C.
B.S. in Ch.E. 1959, University of Illinois

William Lynn Nixon — Idaho
B.S. 1958, Brigham Young University

Julia Jean Norred — Ark.
A.B. 1957, Ohio Wesleyan University

Gabriel Phillips — Md.
B.S. 1956, University of Maryland

Allan Rudolph Plumley, Jr. — Va.
A.B. in Govt. 1959, The George Washington University

Vincent Lawrence Ramik — Va.
B.S. 1957 Pennsylvania State University

Joseph Noel Reemer — Calif.
B.S. 1946, University of Oregon

Mark Robinson — Va.
A.B. 1954, Duke University

William Alexander Scott — D.C.
A.B. 1955, Johns Hopkins University

Richard Reynolds Seideman — Va.
A.B. 1957, Pennsylvania State University

Leonard Sandor Selman — N.Y.
B.S. in Engr. 1958, University of Connecticut

Ralf H. A. O. Siegemund — Va.
Diplom Gesphrecher 1959, Universitat Berlin

Donald LeRoy Smith — Iowa
B.S. 1954, Iowa State University

Robert Frederick Stahl — D.C.
B.S. 1954, Washington College

Donald Phillip Stein — D.C.
B.S. 1958, Case Institute of Technology

Wolmar J. Stoffel — D.C.
B.S. 1957, University of Wisconsin

Louise Anderson Terman — Md.
B.S. 1934, University of Pennsylvania

Robert Thompson — Ill.
B.S. 1958, University of Illinois

James Rumsey Treese — Va.
A.B. 1956, Colgate University

Peter Frank Urbach — Va.
B.S. in E.E. 1957, Carnegie Institute of Technology

Julia Ward — D.C.
A.B. 1923, Ph.D. 1940, Bryn Mawr College

Helen Jeannette Wilbur — Va.
A.B. 1956, Bates College

JUNE 6, 1962

Norma Thomson Bannasch — Mich.
A.B. 1947, University of Michigan

Andrew McReynolds Barnes — D.C.
A.B. 1955, Middlebury College

Bernard Marvin Beerman — Md.
A.B. 1959, Princeton University

Marshall Robert Bentzman — Mass.
B.S. 1956, American International College

Ivars Berzins — Va.
B.S. 1958, Michigan College of Mining and Technology

Cohen Richard Bevda — D.C.
A.B. in Govt. 1959, The George Washington University

Gary Bryan Bisson — Va.
A.B. 1959, University of New Hampshire

Eugene Michael Bond — Ohio
B.Ch.E. 1959, Ohio State University

Howard William Braun, Jr. — Va.
A.B. 1956, Colgate University

David Carvel Bryan — Md.
B.S. in B.A. 1955, Georgetown University

David Martin Butowsky — Md.
A.B. 1958, Temple University

Harry S. Carver III — Va.
A.B. 1955, College of William and Mary

Richard Benjamin Chess, Jr. — Va.
A.B. 1957, Tufts University

Alan Elmer Cobb — D.C.
B.S. 1954, Bowling Green State University

Richard Benjamin Cramer — Pa.
A.B. 1957, University of Michigan

Byron Deem Criddle — Va.
B.S. in C.E. 1956, Utah State University of Agriculture and Applied Science

William Prescott Daisley — Md.
A.B. 1959, Randolph-Macon College

Richard Allan DeLorenzo — N.Y.
B.S. 1959, Fordham University

Wallace Gordon Dickson — Va.
A.B. 1959, The George Washington University

Carl Gordon Dowrey — Va.
B.S. 1958, Montana State College

Robert Wells Duckworth — Fla.
B.I.E. 1957, University of Florida

Donald Erskine Egan — Va.
B.S. in Ch.E. 1956, Pennsylvania State University

Price C. Faw, Jr. — Va.
B.M.E. 1954, Clemson Agricultural College

Charles Narber Finney — D.C.
A.B. in Govt. 1959, The George Washington University

Clarence Joseph Fleming — Va.
B.S. in C.E. 1952, University of Illinois

John Gordon Forester, Jr. — N.C.
B.S. 1955, University of North Carolina

Howard Garfield Garner, Jr. — Va.
B.S. in Textile Mfg. 1958, Clemson Agricultural College

Harry Joseph Guerriera, Jr. — Md.
A.B. 1952, St. Vincent College

Raymond Ernest Hagenlock — Va.
A.B. 1957, Syracuse University

Dennis Haines — Ohio
B.S. in Comm. 1959, Ohio University

Warren Lee Harma — Va.
A.B. 1955, Washington University

John Loren Harmer — Utah
B.S. 1959, University of Utah

Jon Fisher Hollengreen — Va.
B.S. 1959, University of Tennessee

James Calhoun Humes — Fla.
A.B. 1959, The George Washington University

Ralph Cubler Jorgensen — Md.
A.B. in Govt. 1960, The George Washington University

William Adams Lang — Va.
A.B. in Govt. 1954, The George Washington University

Ronald Louis Lenkin — D.C.
A.B. 1959, The George Washington University

Samuel Harris Lewis — Del.
A.B. 1955, Cornell University

Charles Hutchinson Lindrooth — Va
B.S. 1956, University of Illinois

Marie Therese Loepp — Iowa
A.B. 1951, University of Iowa

Robert Emmet Lynch, Jr. — D.C.
A.B. 1956, University of Maryland

Lowell LeRoy Madsen — Utah
B.S. 1954, Brigham Young University

Chester Earl Martine, Jr. — Va
B.M.E. 1958, Rensselaer Polytechnic Institute

Michael Edward McKenzie — Va.
A.B. 1959, Dartmouth College

Stanley Michaels — Va.
A.B. 1959, Cornell University

William Alexander Mikesell, Jr. — Ohio
B.S. 1953, Pennsylvania State University

Stephen Miller — Mass.
A.B. 1959, Michigan State University of Agriculture and Applied Science

Matthew T. Molitch — Md
B.S. 1957, New York University

John Barnard Nash — Va.
B.S. in M.E. 1955, University of Utah

Gary M. Nateman — Ohio
B.S. in Comm. 1959, Ohio University

Julia Nev Nelson — Va
A.B. 1944, University of California

Robert Frederick Peterson — Va
A.B. 1954, University of Idaho

Allen Isaac Polsby — Md
A.B. 1959, Brown University

Stephen William Pournaras — R.I.
A.B. 1942, Brown University
M.S. 1951, New York University

Robert Morris Price — S.C.
A.B. 1959, University of South Carolina

Samuel Joseph Profeta — N.Y.
A.B. 1957, University of Buffalo

David Arthur Richie — Va
A.B. 1958, Haverford College

Lonnie Bruce Ruhin — Md
B.S. 1954, University of Maryland

Robert John Seas, Jr. — Va
B.S. in E.E. 1954, Carnegie Institute of Technology

Jason Lee Shrinsky — Va
A.B. 1959, University of Pittsburgh

Richard Joel Silber — Pa
A.B. 1959, Dickinson College

Donald Edward Sinrod — Md
A.B. in Govt. 1959, The George Washington University

John Rogers Stafford — Va
(With distinction)
A.B. 1959, Dickinson College

Carl Otis Thomas — D.C
B.S. 1957, Texas College of Arts and Industries

John Lee Van Metre, Jr. — W.Va
A.B. 1959, Duke University

William Willson Watkinson — Mich
A.B. 1959, Western Michigan College

Alfred Hatcher Wells, Jr. — Va
B.S. in B.A. 1955, University of South Carolina

Don S. Wenger — Texas
A.B. 1934, University of Wisconsin
M.D. 1937, Marquette University
M.S. 1957, Georgetown University

Kathryn Mickle Werdegar — Calif.
(With distinction)
A.B. 1957, University of California

James Field Whitecarver, Jr. — D.C.
A.B. 1953, Duke University

Nancy Jean Wolff — N.Y.
A.B. 1954, Wellesley College

JURIS DOCTOR

FEBRUARY 22, 1962

Richard Allen Bartl
B.S. 1957, Purdue University — Ind.

Anne Wells Branscomb
A.B. 1949, University of North Carolina
A.B. 1949, Georgia State College for Women — Md.

Jerry Cohen
A.M. 1950, Radcliffe College
B.M.E. 1957, Rensselaer Polytechnic Institute — D.C.

William Lee Dickey
A.B. 1957, Augustana College — S.D.

Charles Christopher Futterer
A.B. 1959, University of Maryland — Md.

Charles Lindbergh Marinaccio
A.B. 1957, University of Connecticut — Conn.

Robert Cook Sullivan
B.S. 1955, Brown University — Md.

David Arnold Swankin
A.B. 1954, Brandeis University
M.S. 1957, University of Wisconsin — Md.

Jerry Don Williams
B.B.A. 1959, University of Oklahoma — Okla.

JUNE 6, 1962

Robert Franklin Burnett
B.S. 1956, Clemson Agricultural College — Va.

Shirle Arthur Debenham
A.B. 1959, University of Utah — Utah

John Alfred Eichler
B.S. 1955, University of Maryland — Md.

Henry Lyon Hall, Jr.
A.B. 1953, University of Massachusetts — Va.

William Hochman
A.B. 1956, Indiana University — N.J.

Ronald Bruce Natalie
(With distinction)
A.B. 1957, Tufts University — Mass.

Woodie Augustus Partee, Jr.
A.B. 1943, University of Georgia — D.C.

Harold Posner
B.S. in I.E. 1958, Pennsylvania State University — Md.

Gordon Jay Quist
A.B. 1959, Michigan State University of Agriculture and Applied Science — Mich.

Carl Walter Schwartz
B.C.E. 1958, Cornell University — Wis.

John Vernon Skinner, Jr.
B.S. 1955, Auburn University — Ga.

John Earl Taulbee
A.B. 1956, St. Ambrose College — Ill.

Max Volterra
B.S. 1957, Brown University — Mass.

MASTER OF LAWS

FEBRUARY 22, 1962

Charles Austin Barth
A.B. 1952, LL.B. 1954, Indiana University — Va.

Edward Joseph Connors, Jr.
B.S. 1954, University of Notre Dame
LL.B. 1959, Georgetown University — Mass.

Kitty Blair Frank
A.B. 1943, University of Wisconsin
J.D. 1959, The George Washington University — D.C.

Marvin Floyd Matthews
A.B. 1957, University of Rochester
LL.B. 1960, American University — Texas

Harold Sidney Schneberg
A.B. in Govt. 1957, LL.B. 1960, The George Washington University — D.C.

JUNE 6, 1962

Robert Frederick Allnutt
B.S. 1957, Virginia Polytechnic Institute
J.D. 1960, The George Washington University — Va.

William Montgomery Champion
B.S. 1953, Mississippi State College
LL.B. 1961, University of Mississippi — Miss.

Eugene Driker
A.B. 1959, J.D. 1961, Wayne State University — Mich.

Lawrence Joseph Fuller
B.S. 1940, U. S. Military Academy
J.D. 1951, University of Michigan — Va.

Charles Stanley Hall
A.B. 1930, McKendree College
LL.B. 1953, Wayne State University — Md.

Daniel Ed Henderson, Jr.
A.B. 1955, Trinity University
LL.B. 1958, University of Texas — Texas

Robert Frederick Kneipp
A.B. 1955, Duke University
LL.B. 1946, The George Washington University — D.C.

William Hale Watkins
A.B. 1958, LL.B. 1960, West Virginia University — Va.

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

FEBRUARY 22, 1962

Diana Hayward Josephson
A.B. 1958, Somerville College, England — D.C.

DOCTOR OF JURIDICAL SCIENCE

FEBRUARY 22, 1962

Edward Gerard Hudon — Maine
B.S. 1937, Bowdoin College
LL.B. 1947, LL.M. 1950, Georgetown University
M.S. in L.S. 1956, Catholic University of America
DISSERTATION: "The Evolution of First Amendment Doctrines in the Supreme Court: An Historical Study of Cases on Freedom of Expression"

JUNE 6, 1962

Robert B. Ellert — N.Y.
A.B. 1947, B.C.L. 1949, College of William and Mary
Postgraduate Diploma in Law 1956, Kings College, University of London, England
DISSERTATION: "NATO 'Fair Trial' Safeguards: Precursor to an International Bill of Procedural Rights"

Cecil Thomas Lakes — Ohio
A.B. 1948, LL.B. 1950, University of Cincinnati
LL.M. 1960, The George Washington University
DISSERTATION: "Extraordinary Contractual Authority in Government Defense Procurement"

Sherwin Carl Pelton — Wis.
B.B.A. 1950, LL.B. 1952, University of Wisconsin
LL.M. 1955, New York University
DISSERTATION: "Manufacturers' Excise Taxes"

STUDENTS REGISTERED IN THE LAW SCHOOL OR GRADUATE SCHOOL OF PUBLIC LAW

SPRING 1961–62, SUMMER 1962, AND FALL 1962–63

A

Adams, Don T.
B.C.E. 1957, University of Florida — Va.

Adams, John G.
LL.B. 1935, State University of South Dakota — D.C.

Addams, Nicholas A.
B.S. in E.E. 1960, Newark College of Engineering — N.J.

Allen, Dillis V.
B.S. in M.E. 1960, University of Wisconsin — Ill.

Allen, Harry B.
A.B. 1939, A.M. 1942, University of California at Los Angeles — Va.

Allen, John W.
A.B. 1961, Yale University — Md.

Allen, Kenneth D.
A.B. 1960, Central Missouri State College — Mo.

Allsbrook, Robert C.
B.B.A. 1961, University of Pittsburgh — Pa.

Alnajjar, Majeed H.
Liac. of Law 1950, Law College of Iraq — Iraq

Alpert, Allen S.
B.I.E. 1961, University of Florida — Fla.

Anderson, Billy R.
B.S. 1960, Brigham Young University — Wyo.

Anderson, Richard A.
B.S. 1957, State University of Iowa — Mich.

Angier, Anna P.
A.B. 1941, Maryville College of the Sacred Heart — Tenn.

Angus, Robert M.
B.S. 1962, Oregon State University — Calif.

Aron, Lewis G.
B.S. 1959, Brown University — R.I.

Arnoff, Mervyn I.
A.B. 1959, University of Michigan
LL.B. 1962, Harvard University — D.C.

Arvidson, Philip R.
B.S. 1961, Oklahoma State University of Agriculture and Applied Science — W.Va.

Ashland, Calvin K.
B.S. 1957, Iowa State University of Science and Technology — Iowa

Asmar, Charles S., Jr.
B.S. 1958, Boston University — Conn.

Aston, William M.
A.B. 1938, St. John's College — W.Va.

Austin, James M.
A.B. in Govt. 1957, The George Washington University — Va.

Austin, Theodore R.
A.B. 1929, M.D. 1932, Vanderbilt University — Tenn.

Autry, George B.
A.B. 1960, LL.B. 1961, Duke University — D.C.

Awe, John R.
A.B. 1962, University of Utah — Utah

B

Baca, Joseph F.
A.B. in Ed. 1960, University of New Mexico — N.M.

Bailey, Paul M.
B.S. 1962, Texas Christian University — Texas

Bauer, Patrick C.
A.B. 1956, Catholic University of America — Mich.

Bergtell, Michael E.
B.S. 1962, University of Maryland — Md.

Barnard, William M.
A.B. 1962, University of Denver — Iowa

Barrington, Carl A., Jr.
A.B. 1958, LL.B. 1962, University of North Carolina — N.C.

Barron, Melvin
A.B. 1961, Boston University — Mass.

Baynham, Robert J.
B.S. in M.E. 1959, University of Pittsburgh — Pa.

Beach, Donald F.
B.B.A. 1961, The George Washington University — D.C.

Beall, Thomas E., Jr.
B.S. 1960, University of Maryland — Md.

Bean, James H.
A.B. 1962, Brigham Young University — Utah

Bean, Wiley E.
A.B. 1962, Michigan State University of Agriculture and Applied Science — Mich.

Beatley, Charles E., Jr.
A.B. 1938, M.B.A. 1947, Ohio State University — Va.

Beatman, James W.
A.B. 1948, Oberlin College
A.M. 1949, University of Pennsylvania — Va.

Beck, Andrew
B.S. 1956, Virginia Polytechnic Institute — Ill.

Beck, Richard M.
B.M.E. 1960, Rensselaer Polytechnic Institute — N.Y.

Beck, William R.
A.B. 1960, University of Miami — Va.

Behringer, John W.
B.S. 1959, University of Dayton — Ohio

Beitler, Roger B.
A.B. 1962, Brigham Young University — Calif.

Belser, Townsend M., Jr.
B.Ch.E. 1958, Georgia Institute of Technology — S.C.

Bender, Sheldon M.
B.M.E. 1961, City University of New York — N.Y.

Bennett, Robert C., Jr.
A.B. 1961, Texas Agricultural and Mechanical College — Texas

Bennion, John C.
A.B. 1961, Pomona College — N.D.

Benson, Ingram T.
A.B. 1959, Carleton College — Va.

Bentzen, Michael P.
A.B. 1962, De Pauw University — Ind.

Bergert, Frederick L.
B.Ch.E. 1959, Georgia Institute of Technology — Fla.

Berk, Allen J.
A.B. 1962, Brooklyn College — N.Y.

Berliner, Henry A.
A.B. 1956, University of Michigan — D.C.

Bernard, Lawrence J., Jr.
B.S. 1962, University of North Carolina — Md.

Berneike, Richard H.
B.S. in Ch.E. 1948, Purdue University — N.Y.

Bernstein, Saul H.
B.S. in Eng. 1957, University of Maryland — Md.

Bielawski, David
A.B. 1955, University of North Carolina — Va.

Bilby, James O.
B.S. in C.E. 1957, University of North Dakota — N.D.

Binns, Norman B.
B.S. 1949, U. S. Coast Guard Academy — Wash.

Biolchini, Robert F.
A.B. 1962, University of Notre Dame — Mich.

Birch, Terrell C.
B.E.E. 1959, The George Washington University — Md.

Bisson, Barry Gale A.
B.S. 1959, University of New Hampshire — N.H.

Bittner, George E.
A.B. 1961, Ohio Wesleyan University — Va.

Bjorge, Gerald H. S.D.
B.S. in C.E. 1959, Northwestern University
Bjorge, Sara E. N.D.
B.S. 1959, Iowa State University of Science and Technology
Black, Wayne V. Mo.
B.S. 1959, University of Missouri
Blackhurst, Daniel G. Mich.
B.S. in M.E. 1960, B.S. 1961, Michigan College of Mining and Technology
Blickstein, Irving N. Ohio
B.I.E. 1962, Ohio State University
Blumenstock, Theodore Va.
B.S. 1958, University of Wisconsin
Boardman, Harold F., Jr. Pa.
B.S. 1961, Trinity College
Bolze, Ray S. Md.
A.B. 1957, Pennsylvania State University
Bond, David M. Md.
B.S. 1962, University of Maryland
Bond, Robert T. Md.
A.B. 1954, Southern Missionary College
Booher, Harold R. Ill.
B.S. 1960, Rose Polytechnic Institute
Boos, John D. N.Y.
B.S. in M.E. 1962, Duke University
Booth, Henry H. D.C.
A.B. 1957, University of North Dakota
Borochoff, Irving D. D.C.
B.S.C. 1956, State University of Iowa
J.D. 1961, DePaul University
Borsari, George R., Jr. D.C.
B.S. 1962, Virginia Polytechnic Institute
Bound, Arthur E. Fla.
B.S. in B.A. 1953, University of Florida
Brack, William D. Texas
A.B. 1962, Washington and Lee University
Bradford, William H. N.C.
A.B. 1959, LL.B. 1962, Duke University
Brand, Joseph L. Ohio
A.B. 1958, University of Michigan
A.M. 1959, Ohio State University
Branigan, Alan E. Va.
B.S. in M.E. 1959, University of Colorado
Branning, Arthur L. Md.
B.E.E. 1952, Georgia Institute of Technology
J.D. 1958, The George Washington University
Brass, Ronald B. D.C.
A.B. 1955, Brooklyn College
Brekke, Raymond Wis.
B.S. in M.E. 1956, University of Wisconsin
Brennan, Jerry H. Pa.
B.S. 1962, Pennsylvania State University
Briggens, Burton G. Iowa
A.B. 1941, State University of Iowa
Brown, Dulcey A. Va.
A.B. 1957, The George Washington University
Brown, Porter K. Kans.
A.B. 1961, University of Kansas
Bruch, George D. Va.
LL.B. 1941, Georgetown University
Bryant, Willard E. Mich.
B.S.E. 1958, University of Michigan
Brzozowski, Edmund Md.
B.E.E. 1950, The George Washington University
Buff, Ralph M. Va.
A.B. 1958, Ohio University
Bullis, Gary G. Nev.
A.B. 1962, University of Nevada
Burgess, Allen E. Va.
A.B. 1962, Bridgewater College
Burghardt, Raymond F. N.J.
A.B. 1960, Kenyon College
Burns, Michael A. Calif.
B.S. 1961, St. Joseph's College
Bushnell, Gene R. S.D.
A.B. 1960, University of South Dakota
Butler, Charles F. D.C.
A.B. 1959, Boston University

C

Caccinpaglia, Frank, Jr. Va.
B.S. 1947, University of Notre Dame
Cahill, Richard M. Md.
B.S. 1961, University of Maryland
Callihan, Herbert A., Jr. N.C.
A.B. 1955, University of North Carolina
Calloway, James R. Del.
A.B. 1959, The George Washington University
Calvert, Jan A. Texas
A.B. 1959, Rice University
LL.B. 1962, University of Houston
Cameron, Donald S. N.Y.
A.B. 1962, Johns Hopkins University
Cammack, Ernest G., Jr. Ga.
B.S. in I.M. 1959, Georgia Institute of Technology
Caplan, Joel B. Va.
A.B. 1949, State University of Iowa
M.S. 1951, B.S. in Phar. 1957, The George Washington University
Capp, Alvin Fla.
A.B. 1961, The George Washington University
Carnes, James R. D.C.
B.S. 1930, Georgia Institute of Technology
LL.B. 1935, Emory University
Carter, Joseph L. Md.
B.S. 1958, Maryland State Teachers College, Frostburg
Carvey, David C. D.C.
A.M. 1955, Pennsylvania State University
Casey, Edward H. Okla.
B.S. 1947, University of Oklahoma
Casey, James E. Va.
B.S. 1957, Roosevelt College
M.B.A. 1957, University of Chicago
Castellano, Joseph N.Y.
A.B. 1959, Princeton University
Catalano, Richard M. Pa.
A.B. 1955, Bowdoin College
A.M. 1958, Tufts University
Catchick, James M. Mich.
A.B. 1961, University of Michigan
Caulfield, Paul J. Pa.
A.B. 1958, St. Francis College
Centola, David D. N.J.
B.S. 1949, Fordham University
Chandler, George P. Md.
B.S. 1956, University of Tennessee
Chapman, Linda A. Wis.
A.B. 1962, Michigan State University of Agriculture and Applied Science
Chase, Edward L. Mass.
A.B. 1962, Kenyon College
Chhabra, Arun K. India
A.B. 1954, D.A.V. College, India
LL.B. 1957, Punjab University
Childress, Henry S., Jr. La.
A.B. 1961, University of Southwestern Louisiana
Chorkavy, Leon, Jr. N.Y.
B.S. 1962, New York University
Clark, Robert B. D.C.
A.B. 1949, Harvard University
Clatterbuck, Dean S. D.C.
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A.B. 1956, Michigan State University of Agriculture and Applied Science
Cocks, Kenneth A. Texas
B.S. in I.E. 1959, Washington University
Coffman, Gordon C. Utah
A.B. 1959, Brigham Young University
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A.B. 1960, Mississippi Southern College
Comeau, Robert F. Mass.
B.S. 1957, U. S. Military Academy
Conlon, Michael C. Md.
A.B. 1954, Lafayette College
Conner, Edgar G. Pa.
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Conroy, Charles J. Pa.
A.B. 1947, Temple University
Constantinople, James D. D.C.
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Cook, Patrick T., Jr. Md.
A.B. 1949, Beloit College
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B.Met.E. 1960, Rensselaer Polytechnic Institute
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A.B. 1961, University of Washington
Cooper, David R. Pa.
A.B. 1962, Pennsylvania State University
Cooper, George M. Va.
B.S. 1957, Pennsylvania State University
Copeland, Milton H. Texas
A.B. 1958, Abilene Christian College
Corrigan, Charles R. N.J
B.S. 1959, University of Florida
Corry, Robert E., Jr. Ala.
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Costello, James A N.Y.
B.S. 1959, Le Moyne College
Coult, Lawrence F., Jr. N.J.
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Cowden, Joseph M. Mich.
B.S. 1954, Iowa State University of Science and Technology
Cowherd, Yelverton, Jr. D.C.
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Cox, Charles S., Jr. D.C.
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Cozen, Edward D. D.C.
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B.S. in E.E. 1957, Virginia Polytechnic Institute
Crawford, Thomas H. Calif.
A.B. 1959, Stanford University
Crichton, William B Va.
B.S. 1955, Virginia Military Institute
Crosby, Jack B. Ky.
M.D. 1957, Indiana University
Crutchfield, Sam S., Jr. D.C.
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Cube, Bienvenido M. Philippines
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Curry, David Pa.
LL.B. 1961, San Beda College
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A.B. 1961, Washington and Lee University
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A.B. 1961, Princeton University
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A.B. 1959, LL.B. 1961, American University
Davis, James G. N.Y.
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B.S. 1961, Temple University
Davis, Michael H Utah
B.S. 1958, Utah State University of Agriculture and Applied Science
Davis, Richard G. Wis.
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Deatz, Merritt S., Jr. Ky.
A.B. 1961, University of Kentucky
DeLashmutt, Charles B. D.C.
B.C.E. 1958, University of Virginia
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A.B. 1961, Marquette University
Dewhurst, John W. Va.
B.I.E. 1961, Georgia Institute of Technology
Dumon, Thomas F D.C.
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A.B. 1959, Brigham Young University
Doldaine, Thomas O Ohio
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B.S. 1958, Brigham Young University
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Goldsborough, Nicholas
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Goldstein, Charles H.
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Goodman, Michael F.
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Goodson, Wallace G.
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Gordon, Daniel A.
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B.S. 1948, University of Michigan — Mich.

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Hall, Audrey D.
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Hammer, Norman F., Jr.
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A.B. 1962, University of Alabama — Ala.

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Haskell, Frank B., III
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Haug, John A.
B.S. 1955, University of New Hampshire — N.H.

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A.B. 1962, Thiel College — Pa.

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A.B. 1956, Williams College — Nebr.

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B.S. 1952, Fordham University — Md.

Haynes, Harry I.
M.D. 1938, The George Washington University — Va.

Healy, Timothy W.
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Heaton, William E.
B.S. in M.E. 1943, Purdue University — D.C.

Hefter, Laurence R.
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B.S. 1957, Tufts University — Conn.

Heller, Frank J.
A.B. 1962, Pennsylvania State University — N.Y.

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B.S. 1961, Morris Harvey College — W.Va.

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Hill, Stephen P. Va.
A.B. 1957, Williams College
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B.E.E. 1957, University of Virginia
Hirsch, Gladys E. Md.
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Hobart, James D. Ohio
B.S. 1958, University of Illinois
Hobbs, Arthur M. D.C.
B.S. 1962, University of Michigan
Hobby, William M N.C.
B.I.E. 1959, University of Florida
Hoffman, Lawrence A N.Y.
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B.S. in M.E. 1960, Newark College of Engineering
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B.S. 1962, University of Rochester
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Holcombe, John H. Ill.
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Honey, Charles L. Va.
A.B. 1960, University of Arkansas
Hopkins, Charles T. Idaho
A.B. 1960, Stanford University
House, Frank O. Ala.
LL.B. 1957, St. Louis University
Houser, Ralph L. Iowa
B.S. in Com. 1935, State University of Iowa
Houston, Joseph G. Ohio
B.S. 1961, Ohio Northern University
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A.B. 1958, Wabash College
Howard, Robert E. Ohio
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Huber, Thomas P. Wis.
B.S. 1959, Marquette University
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Huff, Lawrence A. Mich.
A.B. 1961, Stanford University
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A.B. 1955, Lincoln University
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Humphreys, Robert R. Oreg.
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A.B. 1961, University of Kentucky
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Joyce, Kevin E. Va.
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A.B. 1960, College of St. Thomas

Shealy, Joseph H. — Md.
A.B. 1961, Duke University

Sheets, James R. — Md.
A.B. 1955, Washington State University

Shepherd, Edward A. — Md.
B.S. 1960, University of Maryland

Sherman, Russell E. — N.C.
A.B. 1958, Duke University

Siemens, James B. — Okla.
A.B. 1957, St. John's College

Siemens, John E., Jr. — R.I.
A.B. 1956, St. John's College

Sigmon, Richard R. — Md.
LL.B. 1957, University of Maryland

Silverstein, M. Howard — Mass.
B.S. 1959, Northeastern University

Singman, Marvin P. — D.C.
B.B.A. 1961, The George Washington University

Skolnik, Robert M. — N.Y.
B.E.E. 1962, University of Virginia

Sluck, William J. — Pa.
B.S. in Ed. 1959, Pennsylvania State Teachers College, East Stroudsburg

Smallwood, William E. — Md.
B.S. 1960, Bradley University

Smeets, Adelbert M. — D.C.
Doctorandus 1952, Utrecht University

Smethurst, Raymond S., Jr. — Md.
B.Met.E. 1958, Cornell University
LL.B. 1961, The George Washington University

Smith, Al L. — Md.
B.S. 1957, Pennsylvania State University

Smith, Raoul P. — Utah
B.S. 1957, Florida State University

Smith, Richard H. — Va.
B.S. 1959, Lehigh University

Smith, Stanley L. — N.M.
B.S. 1957, Florida State University

Snead, James E. — Texas
B.S. in E.E. 1959, University of New Mexico

Sousa, John L. — R.I.
A.B. 1960, Boston University

Sperry, Electra A. — Va.
A.B. 1955, Pennsylvania State University

Spiher, Alan T. — Va.
A.B. 1959, University of California

Spruill, William G. — Va.
B.B.A. 1961, College of William and Mary

Spurgeon, Johnny M. — Okla.
B.S. 1959, University of Oklahoma

Staal, Robert J. — Mich.
A.B. 1956, Calvin College
A.M. 1958, University of Michigan
LL.B. 1961, University of Miami

Stack, Norman L. — Md.
B.S. 1957, University of Maryland

Stang, David P. — D.C.
A.B. 1961, Pennsylvania State University

Stanley, Sandra L. — D.C.
A.B. 1960, University of Colorado

Stanton, James A. — Ind.
A.B. 1959, Wabash College

Staton, Robert V. — N.C.
A.B. 1958, University of North Carolina

Steffen, Tommy L. — Utah
B.S. 1957, University of Utah

Steinmetz, Richard C. — Ill.
B.S. in M.E. 1957, Purdue University

Stern, Howard L. — Md.
A.B. in Govt. 1959, The George Washington University

Sterns, Joel H. — N.Y.
B.S. 1956, Northwestern University
M.P.A. 1958, Princeton University

Stevens, Gerald F. — Conn.
A.B. 1960, University of Connecticut

Stevens, Peter W. — Md.
B.S. 1962, University of Pennsylvania

Stevenson, David G. — N.J.
A.B. 1961, Dickinson College

Stewart, Catherine J. — Texas
B.S. 1962, University of Maryland

Stirman, Stanley M. — D.C.
A.B. 1956, Pennsylvania State University

Stiss, Sol B. — Md.
B.S. in B.A. 1956, University of Nebraska

Stock, Eugene A. — Md.
A.B. 1955, University of Washington

Stockman, Eugene W. — N.D.
B.S. 1958, North Dakota Agricultural College

Stohlton, John B. — Calif.
B.S. 1960, Brigham Young University

Stokes, John M. — Texas
A.B. 1961, Texas Technological College

Stolarz, Francis J. — N.J.
A.B. 1956, Johns Hopkins University

Stone, Robert R., Jr. — Va.
A.B. 1958, William Jewell College

Storm, Mary E. — Md.
A.B. 1962, Hood College

Strahs, Robert G. — Ill.
B.B.A. 1962, University of Notre Dame

Strecker, Gerard R. — Va.
B.S. in E.E. 1961, Drexel Institute of Technology

Strobel, Raymond S. — La.
B.S. in M.E. 1956, Washington University

Studebaker, Blair R. — Pa.
B.S. 1956, Pennsylania State University

Sturm, Rex L. — Nebr.
B.S. in I.E. 1959, Iowa State University of Science and Technology

Sullivan, Lawrence R. — Va.
B.S. 1959, Pennsylvania State University

Sullivan, Paul E. — Mass.
B.S. in Ch.E. 1960, Northeastern University

Sullivan, Robert E. — D.C.
A.B. 1949, University of Maine

Susman, Peter M. — D.C.
A.B. 1951, Queens College
A.M. 1954, University of Virginia

Sutton, John P. — Va.
A.B. 1956, University of Virginia

Sweeney, John L. — Mich.
A.B. 1951, A.M. 1954, Michigan State University of Agriculture and Applied Science

Swenson, Sigurd E. — Va.
B.S.C. 1940, University of North Dakota

Swope, Ross H. — Pa.
B.S. in Phar. 1961, The George Washington University

Swope, William E. — Va.
A.B. 1958, University of New Mexico

Szabo, Joseph E. — Va.
B.E.E. 1956, McGill University

T

Tabak, Gary — Pa.
B.S. in E.E. 1961, University of Pennsylvania

Tacke, John B. — Idaho
A.B. 1956, St. Edward's Seminary
LL.B. 1962, The George Washington University

Talbot, John M.
B.S. 1959, University of Maryland — Md.

Tansey, John T.
A.B. 1962, University of Cincinnati — Ohio

Tate, Michael D.
A.B. 1958, St. Ambrose College — Va.

Taylor, Daniel A., Jr.
A.B. in Govt. 1960, George Washington University — D.C.

Taylor, Jean G.
A.B. 1949, Sweet Briar College
A.M. 1951, Cornell University — D.C.

Teberg, Richard L.
A.B. 1958, State University of Iowa — Iowa

Teetsnever, Rene D.
B.S. in M.E. 1956, Washington University — Mo.

Thompson, Mary E.
B.S. 1957, Ohio State University
M.B.A. 1961, The George Washington University — Va.

Thompson, Robert K.
B.S. 1960, Temple University — Miss.

Thomson, Frank H.
B.S. 1962, Clarkson College of Technology — N.Y.

Thomson, James M.
B.S. in E.E. 1960, University of Idaho — Colo.

Timberlake, Ruth L.
A.B. in Govt. 1961, The George Washington University — Texas

Tindal, Donald R
B.S. 1954, University of Maryland — D.C.

Tingey, Don C.
B.S. 1962, University of Utah — Utah

Tocker, Edwin
B.S. 1950, Pennsylvania State University — Md.

Todd, Harry F.
B.S. 1962, Louisiana State University and Agricultural and Mechanical College — La.

Townsend, Donald E.
B.S. 1959, University of Missouri — Iowa

Townsend, William C.
B.S. in Met.E. 1958, University of Pittsburgh — Va.

Tranchitella, Nicola
B.S. 1954, Indiana University — Md.

Treasasky, John O.
B.E.E. 1950, Catholic University of America
LL.B. 1954, Georgetown University — Md.

Tucker, Earl M.
A.B. 1962, Washington and Lee University — Va.

Tucker, Michael F.
A.B. 1961, University of Delaware — D.C.

Tucker, Robert P.
A.B. in Govt. 1960, The George Washington University — Germany

Tung, Tahsung
B.S. 1962, University of Maryland — D.C.

Turnage, Kirby L.
A.B. 1957, University of Alabama — Miss.

Turpen, Donald C.
B.S. 1959, University of New Mexico — Tenn.

U

Udui, Kaleb
A.B. 1960, The George Washington University — Koror-Palau Islands

Urey, David S.
B.S. in I.E. 1958, Northwestern University — N.Y.

V

VanGeem, James P.
A.B. 1958, Northwestern University — Pa.

Vanaarten, William A., Jr.
B.S. in C.E. 1961, Illinois Institute of Technology — Minn.

Vatile, Albert
A.B. 1959, University of Connecticut — Conn.

Vaughan, Roger A., Jr.
B.S. 1956, U. S. Merchant Marine Academy — D.C.

Vernon, Kenneth W.
B.S. 1959, University of Texas — Texas

Viccellio, Nancy B.
A.B. 1934, Meredith College
A.M. 1939, University of Virginia — Va.

Vipond, Richard J.
A.B. 1961, The George Washington University — Iowa

Visick, Hubert H.
A.B. 1955, Brigham Young University — Utah

Vought, Jerry D.
B.S. in Ch.E. 1959, Montana State College — Utah

W

Wakefield, Blair P.
B.S. 1941, University of Pittsburgh — Pa.

Walch, Victor L.
B.S. 1960, University of Utah — Oreg.

Waldman, Marvin M.
A.B. 1962, The George Washington University — Mass.

Walker, Carl H.
B.S. in Ed. 1956, Ohio University — W.Va.

Walker, Lee E.
B.S. 1958, A.M. in P.A. 1961, Brigham Young University — Nev.

Wall, Jesse D.
B.S. 1962, University of Wichita — Mich.

Wallace, Anderson, Jr.
A.B. 1962, The George Washington University — Va.

Wallis, Charles E.
B.S. 1959, Northwestern University — Pa.

Walters, Gomer W
B.E. 1958, Yale University — Pa.

Ward, Hugh W., Jr.
A.B. in Govt. 1959, The George Washington University — Va.

Waxman, Robert I.
B.B.A. 1959, University of Michigan
J.D. 1962, Northwestern University — Ill.

Webb, Thomas H.
B.S. in C.E. 1944, Ohio Northern University — Md.

Webster, David Z.
A.B. 1957, Bowdoin College — N.Y.

Weeks, Cora E.
A.B. 1957, Miami University — D.C.

Weitz, Irwin I.
A.B. 1958, American International College — Mass.

Weitzman, David M.
B.S. 1959, University of Chicago — D.C.

Welther, Frederick L.
A.B. 1961, Duke University — Ky.

Werdig, Robert M., Jr.
B.S. 1961, University of New Mexico — D.C.

West, Ronald D
A.B. in Govt. 1958, The George Washington University — D.C.

Westerman, Arnold R.
A.B. 1962, University of Maryland — Del.

Westerman, Christian C.
B.S. 1955, University of Virginia — Ga.

Western, Marion W
B.S. 1961, Utah State University of Agriculture and Applied Science — Utah

Wexler, Robert E.
A.B. 1954, University of South Dakota — Mo.

Wheeler, Kenneth G.
B.S. 1959, University of Arkansas — Okla.

Whisenhunt, Fred S.
B.Ch.E. 1956, North Carolina State College of Agriculture and Engineering — N.C.

Whisler, John W.
B.S. 1957, Iowa State University of Science and Technology — Iowa

White, Howard A.
B.E.E. 1949, City University of New York
M.P.A. 1959, New York University
LL.B. 1954, St. John's University — N.Y.

White, Leonard A.
B.M.E. 1959, The George Washington University — Md.

Whitham, Charles L. Colo.
B.E.E. 1961, The George Washington University

Whitney, John A. Mass.
A.B. 1961, Williams College

Wildhack, William A. Md.
B.S. 1957, Miami University

Williams, David O. Md.
A.B. 1960, Dickinson College
A.M. 1962, American University

Williams, Donald E. N.Y.
B.Ch.E. 1954, Rensselaer Polytechnic Institute

Williams, Edwin A. Okla.
A.B. 1961, Oklahoma State University of Agriculture and Applied Science

Williams, Gerald E. Miss.
B.S. 1955, Delta State College

Williams, James A. Nebr.
B.S. 1958, University of Nebraska

Williams, Jan E. D.C.
A.B. 1961, Colgate University

Willis, Betty J. Ga.
B.S. 1950, University of Pittsburgh
M.B.A. 1957, University of Pennsylvania

Willis, Floyd III Md.
A.B. 1961, University of Maryland

Winer, David E. Va.
B.E. 1956, Vanderbilt University

Wise, Joseph G. Idaho
B.S. 1960, Brigham Young University

Wolf, Karl E. Conn.
B.S. 1943, U. S. Military Academy
LL.B. 1953, University of Pennsylvania

Wolfe, William S. Pa.
B.S. in E.E. 1959, Lehigh University

Wolpert, Ira C. N.Y.
B.S. 1959, Cornell University
LL.B. 1962, Georgetown University

Wood, Richard L. Mich.
B.S. in M.E. 1958, M.B.A. 1959, University of Michigan

Woodruff, Eugene B Ill.
B.S. 1954, University of Michigan
M.S. 1957, Purdue University

Wright, Joseph S., Jr. Mass.
A.B. 1960, Beloit College

Wyman, Charles M.
A.B. 1955, The George Washington University

X

Xiarhos, Peter Mass.
B.S. in E.E. 1962, Northwestern University

Y

Yeager, Frederick G. Iowa
B.S. 1960, University of South Dakota

York, Dennis A. Va
B.S. in B.A., LL.B. 1950, University of Arkansas

Young, Glenn F. Md.
B.S. 1953, U. S. Coast Guard Academy

Young, Roger D. Va.
A.B. 1957, Randolph-Macon College

Young, William R. Va
A.B. 1952, Richmond College

Z

Zanfagna, Philip E. Mass.
A.B. 1958, Ohio Wesleyan University
B.D. 1961, Yale University

Zeldon, Joan M. D C
A.B. 1960, Smith College

Zinn, Robert J. Pa.
B.M.S. 1958, M.S. 1959, Bucknell University

Zipperian, Herbert L. Wash.
A.B. 1957, University of Chicago

Zoole, Jon L. Conn
A.B. 1960, Duke University

Zugschwerdt, David W. Texas
A.B. 1961, Northwestern University

SUMMARIES OF REGISTRATION

SPRING SEMESTER 1961–62, SUMMER TERM 1962, FALL SEMESTER 1962–63

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama	4	New Mexico	4
Alaska	1	New York	68
Arizona	3	North Carolina	8
Arkansas	5	North Dakota	6
California	9	Ohio	23
Colorado	4	Oklahoma	8
Connecticut	12	Oregon	2
Delaware	6	Pennsylvania	46
District of Columbia	123	Rhode Island	4
Florida	15	South Carolina	3
Georgia	4	South Dakota	4
Hawaii	4	Tennessee	3
Idaho	8	Texas	19
Illinois	22	Utah	23
Indiana	6	Virginia	179
Iowa	17	Washington	8
Kansas	6	West Virginia	13
Kentucky	4	Wisconsin	6
Louisiana	4	Wyoming	1
Maine	4	Cuba	1
Maryland	2	Denmark	1
Massachusetts	127	India	1
Michigan	17	Iraq	1
Minnesota	21	Japan	2
Missouri	4	Korea	1
Montana	13	Philippines	1
Nebraska	2	Turkey	1
Nevada	6	Viet Nam	1
New Hampshire	3	Other	1
New Jersey	5		
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GRADUATES OF COLLEGES REGISTERED IN THE LAW SCHOOL OR THE GRADUATE SCHOOL OF PUBLIC LAW

Abilene Christian College	1	Bowdoin College	2
Adams State College	1	Bowling Green State University	2
Alabama, University of	4	Bradley University	2
Alfred University	3	Bridgewater College	1
Ambrose College	1	Brigham Young University	19
American International College	1	Brooklyn College	5
American University	11	Brooklyn Law School	1
Amherst College	1	Brooklyn, Polytechnic Institute of	2
Antara University	1	Brown University	4
Arizona, University of	1	Bryn Mawr College	1
Arkansas, University of	4	Bucknell University	4
Asanta Law College	7	Buffalo, University of	1
Baghdad, University of	1	California, University of, Berkeley	4
Baldwin-Wallace College	1	California, University of, Los Angeles	2
Belgrade, University of	1	Calvin College	1
Beloit College	1	Canisius College	1
Birmingham Southern College	2	Carleton College	1
Boston University	1	Carnegie Institute of Technology	3
	6		

Carson-Newman College	1
Case Institute of Technology	2
Catholic University of America	4
Central Missouri State College	1
Centre College of Kentucky	1
Chatham College	1
Chicago, University of	4
Cincinnati, University of	5
Citadel, The	1
Clarkson College of Technology	3
Colgate University	5
Colorado School of Mines	1
Colorado State University	2
Colorado, University of	3
Columbia University	5
Connecticut, University of	7
Cornell University	9
D.A.V. College, India	1
Dartmouth College	3
Dayton, University of	2
Delaware, University of	2
Delta State College	1
Denmark, Technical University of	1
Denver, University of	3
DePaul University	1
DePauw University	3
Dickinson College	6
Drake University	1
Drexel Institute of Technology	8
Duke University	12
East Tennessee State College	1
Emory University	1
Florida State University	2
Florida, University of	7
Fordham University	4
George Washington University, The	79
Georgetown University	18
Georgia Institute of Technology	9
Georgia, University of	1
Gettysburg College	1
Gonzaga University	1
Grove City College	1
Hamline University	1
Hampden-Sydney College	1
Harvard University	11
Havana, University of, Cuba	1
Haverford College	1
Hillsdale College	1
Hobart College	1
Holy Cross, College of the	1
Hood College	1
Houston, University of	1
Hunter College	2
Idaho State College	2
Idaho, University of	5
Illinois Institute of Technology	3
Illinois, University of	9
Illinois Wesleyan University	1
Indiana University	2
Iowa, State College of	3
Iowa, State University of	5
Iowa State University of Science and Technology	12
Iraq, Law College of	1
Johns Hopkins University	3
Kalamazoo College	1
Kansas State College	1
Kansas State University of Agriculture and Applied Science	2
Kansas, University of	1
Keio University	1
Kent State University	4
Kentucky, University of	2
Kenyon College	5
Lafayette College	2
LaSalle College	1
La Sierra College	1
Lawrence College	1
Lebanon Valley College	7
Lehigh University	1
LeMoyne College	1
Lincoln University	1
Louisiana College	2
Louisiana State University and Agricultural and Mechanical College	2
Loyola University	1
Maine, University of	1
Marburg, University of	3
Marietta College	1
Marquette University	43
Maryland State Teachers College, Frostburg	1
Maryland, University of	8
Maryville College of the Sacred Heart	2
Massachusetts Institute of Technology	1
Massachusetts, University of	1
McGill University	5
Meredith College	7
Miami University	3
Miami, University of	5
Michigan College of Mining and Technology	20
Michigan State University of Agriculture and Applied Science	1
Michigan, University of	3
Minnesota State Teachers College, Mankato	1
Minnesota, University of	6
Mississippi Southern College	3
Missouri, University of	1
Montana State College	2
Montana State University	1
Morris Harvey College	1
Mount Union College	6
Muhlenberg College	1
Nebraska, University of	1
Nebraska Wesleyan University	4
Nevada, University of	6
Newark College of Engineering	1
New Hampshire, University of	2
New Jersey State Teachers College, Montclair	4
New Mexico State University	11
New Mexico, University of	1
New York, City University of	
New York State Maritime College	

New York, State University of	1
New York University	7
North Carolina, Agricultural and Technical College of	1
North Carolina State College of Agriculture and Engineering	4
North Carolina State Teachers College	1
North Carolina, University of	6
North Dakota Agricultural College	1
North Dakota, University of	4
North Texas State College	1
Northeastern University	3
Northwest Missouri State College	1
Northwestern University	12
Norwich University	1
Notre Dame, University of	8
Oberlin College	1
Ohio Northern University	2
Ohio State University	10
Ohio University	3
Ohio Wesleyan University	3
Oklahoma State University of Agriculture and Applied Science	3
Oklahoma, University of	5
Omaha, Municipal University of	1
Oregon State College	1
Oregon State University	1
Oregon, University of	1
Ouachita Baptist College	1
Pennsylvania State Teachers College, Bloomsburg	1
Pennsylvania State Teachers College, East Stroudsburg	1
Pennsylvania State University	1
Pennsylvania, University of	26
Pittsburgh, University of	7
Pomona College	7
Pratt Institute	1
Princeton University	1
Principia College	1
Punjab University	5
Purdue University	1
Queens College	11
Randolph-Macon College	1
Reed College	1
Rensselaer Polytechnic Institute	1
Rhode Island School of Design	11
Rhode Island, University of	1
Rice University	1
Richmond College	2
Richmond Professional Institute	1
Roanoke College	1
Rochester, University of	1
Roosevelt College	1
Rose Polytechnic Institute	3
Rutgers University	1
Saigon, University of	3
St. Edwards Seminary	2
St. Francis College	1
St. John's College	1
St. John's University	3
St. Joseph's College	2
St. Lawrence University	2
St. Louis University	1
St. Mary-of-the-Woods College	4
St. Olaf College	1
St. Thomas, College of	2
San Beda College	1
San Diego State College	1
Santo Tomas, University of	1
Simpson College	1
Smith College	1
South Carolina, University of	2
South Dakota School of Mines and Technology	4
South Dakota State College of Agriculture and Mechanic Arts	2
South Dakota, State University of	2
South, University of the	6
Southern Methodist University	2
Southern Missionary College	1
Southwestern College	1
Southwestern Louisiana, University of	1
Stanford University	1
Swarthmore College	4
Sweet Briar College	1
Syracuse University	1
Temple University	3
Tennessee, University of	6
Texas Agricultural and Mechanical College	1
Texas Christian University	3
Texas Technological College	3
Texas, University of	2
Thiel College	5
Toledo, University of	1
Transylvania College	1
Trinity College	1
Tufts University	2
Tulsa, University of	3
Union College and University	1
U. S. Coast Guard Academy	1
U. S. Merchant Marine Academy	8
U. S. Military Academy	2
U. S. Naval Academy	4
U. S. Naval Postgraduate School	4
Utah State University of Agriculture and Applied Science	1
Utah, University of	6
Utrecht University	10
Vanderbilt University	1
Vermont, University of	3
Villanova University	3
Virginia Military Academy	1
Virginia Polytechnic Institute	2
Virginia, University of	4
Wabash College	16
Wake Forest College	3
Washington and Lee University	1
Washington University	7
Washington, University of	12
Wayne State University	8
Wellesley College	3
West Virginia State College	1

West Virginia University	5	William and Mary, College of	4
Western Maryland College	1	Williams College	3
Western Michigan University	1	Wisconsin State College	2
Western Reserve University	1	Wisconsin, University of	14
Westminster College	1	Worcester Polytechnic Institute	1
Whitman College	1	Wyoming, University of	1
Wichita, University of	1	Yale University	10
William Jewell College	1		

SUMMARY OF REGISTRATION
LAW SCHOOL AND GRADUATE SCHOOL OF PUBLIC LAW

FALL SEMESTER 1962

	Men	*Women*	*Total*
First Year	271	19	290
Second Year	263	6	269
Third Year	275	8	283
Candidates for degree of Master of Laws	21	---	21
Candidates for degree of Master of Comparative Law	2	---	2
Candidates for degree of Master of Comparative Law (American Practice)	8	....	8
Candidates for degree of Doctor of Juridical Science	6	---	6
Unclassified	41	1	42
TOTAL	887	34	921

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SEMINAR IN TAXATION



A Session of the Trial Practice Court

THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), and Doctor of Business Administration (D.B.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), and Master of Public Administration (M.P.A.)

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications should be addressed as indicated.

College of General Studies.....Dean of the College of General Studies
Columbian College of Arts and Sciences.....Director of Admissions
Division of University Students.....Director of Admissions
Fellowships, Scholarships, Prizes,
Financial Aid.....Chairman, Committee on Scholarships
General Catalogue of the University.....Director of Admissions
Graduate Council.....Dean of the Graduate Council
Law School and Graduate School of Public Law.....Director of Admissions
School of Education.....Director of Admissions
School of Engineering and Applied Science.....Dean of the School
School of Government, Business,
and International Affairs.....Director of Admissions
School of Medicine.....Admissions Office, School of Medicine
Summer Sessions.....Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters.....Registrar
Schedule of Classes: Summer Sessions.....Dean of the Summer Sessions

THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF PHARMACY, 1906

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AIR SCIENCE, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

The George Washington University

Bulletin



THE GRADUATE COUNCIL
1963-64

WASHINGTON 6, D. C.
JANUARY 1963
Vol. LXII No. 7

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

Admission.....Director of Admissions, Building C

School of Medicine.....1339 H Street NW.

Air Science (ROTC).....Director of Air Science, Chapin Hall

Alumni Association.....Alumni Office, Bacon Hall

Medical Alumni Association.....1335 H Street NW.

Foreign Students.....Adviser to Foreign Students, Building T

Graduate Study

In Arts and Sciences

Master's degrees.....Dean of Columbian College of Arts and Sciences

Doctor of Philosophy.....Dean of The Graduate Council

In Education.....Dean of The School of Education

In Engineering or Applied Science.....Dean of The School of Engineering and Applied Science

In Law.....Dean of The Graduate School of Public Law

In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Hospital Administration, International Affairs, Nursing Home Administration, Personnel Administration, Public Administration, Public Affairs.....Dean of The School of Government, Business, and International Affairs

Housing

Men.....Director of Activities for Men, Building Q

Women.....Director of Activities for Women, Woodhull House

Scholarships.....Chairman, Committee on Scholarships, Building T

Student Employment.....Student Placement Office, 2114 G Street NW.

Summer Sessions.....Dean of the Summer Sessions, Building T

Transcripts of Records.....Registrar, Building C

Veterans Education.....Director of Veterans Education, Building Q

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The George Washington University

Bulletin

THE GRADUATE COUNCIL
1963-64

VOLUME LXII JANUARY 1963 NUMBER 7

1963

July

S	M	T	W	T	F	S
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November

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December

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CALENDAR 1963-64

FALL SEMESTER:

Registration	Sept 19–21*	Thurs–Sat
Application for Feb graduation due in Registrar's Office		
Veterans Day (holiday)	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
Dissertations of Feb candidates due in Dean's Office	Dec 2	Mon
Christmas recess	Dec 21–Jan 1	Sat–Wed
Last day of fall-semester classes	Jan 15	Wed
Examination period	Jan 20–25	Mon–Sat

SPRING SEMESTER:

Registration	Jan 30–Feb 1*	Thurs–Sat
Application for June graduation due in Registrar's Office		
Winter Convocation	Feb 22	Sat
Spring recess	March 25–31	Wed–Tues
Dissertations of June candidates due in Dean's Office	April 1	Wed
Last day of spring-semester classes	May 20	Wed.
Examination period	May 23–29	Sat–Fri
Memorial Day (holiday)	May 30	Sat
Baccalaureate Service	June 7	Sun
Commencement	June 7	Sun

REGISTRATION FOR THE FALL SEMESTER 1964-65

Sept 17–19 Thurs–Sat

*Thursday and Friday from 12:00 to 8:00 P.M.; Saturday from 10:00 A.M. to 1:00 P.M.


THE
GEORGE WASHINGTON
UNIVERSITY
Union Station
Folger
Shakespeare
Library
Supreme Court
THE CAPITOL
Library of Congress
Archives Bldg
Federal
Trade Comm
Treasury Dept
Dept of Justice
Post Office
Dept
National Gallery of Art
George Washington
University Hospital
Executive
Office Bldg
WHITE
HOUSE
Dept of
Commerce
Dept of Labor
Natural History Bldg
Smithsonian
Institution
Dept of
Interior
Voice of America
Dept of Health, Education and Welfare
Dept of State
Pan American Union
Dept of Agriculture
Nat Academy of Science
Washington
Monument
Lincoln Memorial
POTOMAC
RIVER
TIDAL
BASIN
N

THE GRADUATE COUNCIL

GENERAL INFORMATION

INTRODUCTORY

The Graduate Council offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

ADMISSION PROCEDURE

For admission to doctoral work the student must possess adequate preparation for advanced study, together with acceptable personal qualities and a capacity for creative scholarship. Adequate preparation presupposes a satisfactory Bachelor's degree in the same general field as that proposed for doctoral study. Students beginning the first year of graduate study who plan to work towards the degree of Doctor of Philosophy are given provisional status in the Graduate Council. However, if these students wish, and if the Dean of the Graduate Council so advises, they may register for the Master's degree in the liberal arts college (Columbian College of Arts and Sciences) or in the School of Government, Business, and International Affairs during the first year and apply for transfer to full status in the Council upon completion of the Master's degree work.

Application forms may be obtained from the Office of the Dean of the Graduate Council. The form must be filled out completely and returned with the application fee of $15, together with a recent photograph, signed by the applicant. At the time of filing the application, the student should request that transcripts of all previous academic training be sent to the Office of the Dean, together with letters of recommendation. Each application, with transcripts and letters, is examined by a committee which, if the applicant is accepted, constitutes his Consultative Committee. This Committee supervises all aspects of the student's program and work leading to the General Examination.

REGISTRATION PROCEDURE

An applicant, upon receiving a letter of admission from the Graduate Council, is eligible to register at the beginning of the next semester. Doctoral students come directly to the Graduate Council Office to begin their registration process each semester.

THE PLAN OF WORK

The discipline for the degree is divided into three stages. (1) The first year of graduate study constitutes the initial stage, either in the Graduate Council on provi-

sional status, or in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs enrolled as a Master's candidate intending to gain full status in the Council.* (2) Full status in the Council follows completion of the first year of graduate study and culminates in the General Examination. (3) The final stage is given to research and investigation of a particular project in a special field, the presentation of the findings in a written dissertation, and the Final Examination.

LANGUAGE EXAMINATIONS

French and German are the normally required languages; reading proficiency must be demonstrated by examination. The examinations are arranged through the Office of the Dean. The satisfactory completion of French 49 and/or German 49 meets the language requirement. The Consultative Committee may allow either French or German to be replaced by another language important to the student's research interest. Language examinations may be taken soon after entrance, but the first one must be passed no later than the beginning of the second semester following admission. The second examination must be passed well before completion of work for the General Examination.

THE FIRST YEAR OF STUDY

A student who enters the Graduate Council on provisional status to undertake the first year of graduate study has his program planned by a Consultative Committee. If the first year of work is taken in Columbian College of Arts and Sciences or the School of Government, Business, and International Affairs preparatory to gaining full status, Graduate Council advisers aid in planning the Master's program to fit the work into the doctoral program of the student. Upon satisfactory completion of the first year, the student is eligible to apply for full status. Students who have completed a year of satisfactory graduate work at other universities are also eligible to apply directly for full status in the Graduate Council.

STUDY FOR THE GENERAL EXAMINATION

At the beginning of the student's full status, the Consultative Committee is assigned to direct his work in an integrated group of fields of learning, usually five or six in number, deemed necessary to insure his breadth of knowledge, as well as to support the dissertation project in his central field. Members of the Consultative Committee advise the student concerning the scope and content of these supporting fields, and assist him in preparation for his examination in them.

This advanced study in full status does not entail the taking of a second full year of graduate courses and seminars. Additional course work may not be necessary in some cases; in any event, the Consultative Committee determines whether such additional course work is needed, and if so, how much. In this stage of the work the main emphasis in preparation is on conferences with committee members and independent study. Performance in the General Examination is the test of the student's ability to enter upon the final stage of his doctoral discipline.

The examination is a series of written tests usually extending over a period of two weeks. The major portion of a day is given to each part of the examination covering

* Students on a part-time basis will normally complete a year of graduate study in two years.

one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a doctoral candidate, to pursue his specialized study and research under the supervision of a member of the Council.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

After the student has been admitted as a doctoral candidate and his research program has been arranged, he is responsible to the member of the Council who directs his research project. The Consultative Committee, in keeping with tradition, goes out of existence with the successful completion of the General Examination. The Committee, however, can make recommendations either to the student or the Research Director, for the period following the General Examination—but cannot impose these as advance requirements. In special instances an advisory committee (which may or may not correspond in personnel with the previous Consultative Committee) may be convened to consider major questions concerning the program of a given student in the period after the General Examination. Generally, such a committee would be named by the Dean at the request of the Research Director. The responsibility for the program between examinations rests with the Director of Research, with the understanding that whenever a Director and Co-director arrangement obtains, that member on the permanent staff of the University shall have final responsibility on matters of policy and program. The Director of Research and the advisory committee may require further course work, where circumstances warrant such action.

The candidate may enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the candidate to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all candidates as evidence of ability to perform scholarly research and to interpret its results. The student's dissertation subject and plan must be approved by the Director and two members of the General Examination Committee, after the General Examination is passed and before his actual research is begun.

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation together with a fourth copy of the summary. Printed copies of detailed regulations regarding the form and reproduction of the dissertation and its summary are available in the Office of the Dean. The summaries of accepted dissertations are printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation. Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

When the completed dissertation has been approved by the Director of Research and by two other members of the Council, and submitted to the Office of the Dean, the candidate is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the candidate satisfies the examining commit-

tee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Dean of the Graduate Council.

LITERATURES AND LANGUAGES

American

(1) Fiction; (2) Literary Nationalism — Coberly, Walker
Social Themes in Literature

English

(1) Sixteenth Century Drama; (2) Seventeenth Century Drama — Tupper, Reesing, Highfill, Linton
Seventeenth Century Literature
(1) Eighteenth Century Literature; (2) History of English Drama
Twentieth Century Literature

Germanic

(1) Middle High German Language and Literature; (2) Early New High German Language and Literature — Legner, King, Allee
(1) Old High German Language and Literature; (2) German Romanticism
Old Norse Language and Literature
German Classicism
(1) German Realism; (2) Twentieth Century German Literature — Allee, King
Linguistic Analysis

Romance

Modern Spanish Literature — Alonso, McSpadden
(1) Linguistics; (2) Spanish-American Literature; (3) Spanish Literature — Protzman, Clubb, Monde
Seventeenth Century French Literature
French Literature since 1880
(1) Eighteenth Century French Literature; (2) Twentieth Century French Literature — Supervia
(1) Nineteenth Century Spanish Literature; (2) Twentieth Century Spanish Literature — Robb
(1) Spanish-American Literature; (2) Modern Spanish Literature

SOCIAL SCIENCES

Economics

History of Economic Thought — A. Burns, Watson, Skinner
Economic Policy — Watson, Skinner, Samuelt
Economic Theory — Polak, Young, de Vrie
International Economics — Skinner
International Finance — Kendrick, Colm
Methodology of Economics
National Income — Kennedy
Public Finance
Soviet Economics
Transportation

Geography	
City Planning	Woodruff
Cultural Geography	Mosél, Campbell
Regional Planning	Woodruff, Campbell
Regional Industrial Development	Woodruff
History	
European: Diplomatic since 1815	R. Davison
European: Nationalism	Kayser
European: Russian and Soviet	Thompson
History of Religion in the United States	
The Modern Near East	R. Davison
Latin American	Davis
United States: Diplomatic	Merriman
United States: (1) Social; (2) Economic	Gray
United States: Political	Haskett
International Relations	
Program includes work in Economics, History, and Political Science	
Sino-Soviet Area	London
Political Science	
Comparative Government and Political Theory	Kraus
International Politics and Organization	
International Politics	Nimer
International Law: (1) War and Neutrality; (2) Arbitration	Brewer
International Relations	Hilsman
International Relations, especially American Foreign Policy	Haviland
(1) The Political Process; (2) Political Controls Over Administrative Agencies	LeBlanc
United States: (1) The Legislative Process; (2) Governmental Organization and Administration	West
Psychology	
Clinical	
Comparative	
Experimental	Hunt, Mercer, Clyde
Personnel Psychology	Caldwell
Psychological Measurements	Hill, Walk
Social Psychology	Mosél
	Hunt
	Schlesinger, Tuthill

MATHEMATICAL AND PHYSICAL SCIENCES

Chemistry	
Analytical	Schmidt
Geochemistry	Naeser, Christ
Inorganic	Naeser, Perros, White
Organic	Wrenn
Physical: Kinetics and Electrochemistry	R. E. Wood
Physical: Solubilities	Van Evera
Physical-Organic: Reaction Mechanisms	Sager
Mathematics	
Algebra: Finite Groups	Johnston
Algebra: Matrix Theory	Wiegmann
Analysis: Functional Analysis	Liverman
Analysis: Infinite Series	Mears
Mathematical Logic	Nelson
Physics	
Atmospheric Physics	Clark
Behavior of Electrons in Solids	Hobbs
Biophysics; Theoretical: (1) Quantum Mechanics; (2) Molecular Physics; (3) Relativity	Jehle
Electron Optics	Marton

(1) Experimental Nuclear Physics; (2) Radioactivity — Yeandle, Goxe
Experimental Biophysics — Bergmann
Low Energy Nuclear Physics — Frenkiel
Theoretical
Theoretical: Aerodynamics

Statistics — Kullback

Multivariate Analysis
(1) Applied: Econometrics; (2) Theoretical: Probability and Sampling — Bright
(1) Psychometrics; (2) Managerial Statistics

MEDICAL SCIENCES

Anatomy

Embryology — Allan
Gross Anatomy — Telford
Histology — Telford, Johnson
Neuro-ophthalmology — von Sallmann
Physical Anthropology — T. Stewart

Biochemistry

Amino Acid Metabolism — La Du, Udenfriend
Animal Nutrition — Borges
Ascorbic Acid Metabolism — J. Burns
Biochemical Detoxication — Brodie
Biochemical Detoxication — Roe
(1) Carbohydrate Metabolism; (2) Nutrition (emphasis on vitamins); (3) Pathological Chemistry — Stetten, Carroll
Carbohydrate Metabolism — Brady
Chemistry and Metabolism of Proteins — Mertz
Complex Lipids — Treadwell
Intermediary Metabolism — Grant
Lipids — Rabinowitz, Lenhoff
Metabolic Relationships of Insulin — Burk
Protein Metabolism
Protein Biosynthesis
Tissue Respiration

Microbiology

Bacterial Physiology — R. C. Wood
Bacterial Physiology and Nutrition — Altenbern
Determinative Bacteriology — Hugh
Immunology — Surgalla, Wright, Parlett
(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis — Griffin, Jacobs
Microbiology — Robbins, Brown
Virology — Peery

Pathology

Comparative Pathology

Pharmacology

Chemotherapy — Goldin, J. Henderson, Mandel
Drug Metabolism — Axelrod, Cohn, C. Davison, Gillette, Mazel, Mandel
Neurohormones — Udenfriend

Physiology

Cardiovascular Physiology — Renkin, Leese, Sarnoff
Cellular Physiology — Duryee, Renkin, Hoffman
Endocrinology — Hertz
Gastrointestinal Physiology — Tribull
Membrane Physiology — Renkin, Diecke
Neurophysiology — Diecke, Leese
Renal Physiology — R. Henderson

Psychiatry — Overholser

Problems of Treatment (M.D. degree required for admission)

BIOLOGICAL SCIENCES

Biology	
Cytology	**Bowman**
Botany	
Cytogenetics	R. Stewart
(1) Mycology; (2) Plant Pathology	Stevens
(1) Mycology; (2) Plant Physiology: Microorganisms	Hacskaylo
Photobiology	Shropshire
Plant Ecology	Sigafoos
Plant Physiology: Vascular Plants	Cathey
Plant Taxonomy	Parker
Plant Virology	Kaper
Taxonomy	Smith
Zoology	
Entomology: Insect Physiology	Munson
Histophysiology	Desmond
Vertebrate: Embryology and Morphogenesis	Hansen
Vertebrate: Ichthyology	Schultz

RESIDENCE AND CONTINUOUS REGISTRATION

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the General Examination or as a doctoral candidate engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain continuous registration under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student. In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his Consultative Committee or the member of the Council who directs his research. The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

POST-DOCTORAL STUDY

The Council expects its graduates to continue their interests in advanced study and research, and to contribute to its program. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual residence fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Dean of the Council. Post-doctoral work taken under this privilege may not be applied toward any degree offered by the University.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

HEALTH ADMINISTRATION

The Health Administration Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Administration, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education; (2) three visits in any one illness by a member of the Health Administration Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration*. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of physical education.

* See Rule (5) for exception.

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* For the academic year 1962-63.

THE UNIVERSITY

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The idea of a university in the Capital of the Nation was sponsored by George Washington.

The purpose of The George Washington University expressed in the words of the Bill of Incorporation, introduced and subsequently enacted by Congress in 1821, was to realize "the aspirations of Washington, Jefferson, and Madison, for the erection of a university at the seat of the Federal Government." This central idea of a university functioning in the Capital of the Nation, nonsectarian, free of sectional limitations, conscious of its wide American relationships, and open to the ever-increasing international influences which bear upon it, has been continuous through nearly a century and a half.

The purpose of this University, therefore, has been to develop the university ideal in the place of greatest national significance, flexible before the changing needs of its growing national constituency and loyal to the traditional principles of learning and research, in providing through disciplined reason, wisdom for the individual and his society.

The University as it is now organized consists of Columbian College of Arts and Sciences; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools of Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

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The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board. The Department of Chemistry is on the approved list of the American Chemical Society.

LOCATION

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

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The George Washington University

Bulletin



COLUMBIAN COLLEGE OF ARTS AND SCIENCES

1963-64

WASHINGTON 6, D. C.
FEBRUARY 1963
Vol. LXII No. 8

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Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

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THE CALENDAR

1963

July

S	M	T	W	T	F	S
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August

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September

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October

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December

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1964

January

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March

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June

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July

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August

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September

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October

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November

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December

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THE CALENDAR 1963-64

FALL SEMESTER:	
Advising: freshmen	Sept 11–18 ..... Wed–Wed
Orientation Assembly: all new students	Sept 13 ..... Fri
Curriculum assemblies: new students attend one	Sept 13 and 16 ..... Fri and Mon
Placement tests	Sept 16 ..... Mon
Advising: transfer students and upper classmen	Sept 16–18 ..... Mon–Wed
University Faculty Assembly Meeting	Sept 18 ..... Wed
Registration	Sept 19–21* ..... Thurs–Sat
Application for Feb graduation due in Registrar's Office	
Classes begin	Sept 23 ..... Mon
Subjects of Master's theses of Feb candidates due in Dean's Office	Oct 4 ..... Fri
Veterans Day (holiday)	Nov 11 ..... Mon
Thanksgiving recess	Nov 28–30 ..... Thurs–Sat
Graduate Record Examination	Dec 14 ..... Sat
Christmas recess	Dec 21–Jan 1 ..... Sat–Wed
Classes resume	Jan 2 ..... Thurs
Master's theses of Feb candidates due in Dean's Office	Jan 2 ..... Thurs
Last day of fall-semester classes	Jan 15 ..... Wed
Examination period	Jan 20–25 ..... Mon–Sat
SPRING SEMESTER:	
Advising: freshmen, sophomores, all new students	Jan 20–29 ..... Mon–Wed
Placement tests	Jan 27 ..... Mon
Registration	Jan 30–Feb 1* ..... Thurs–Sat
Application for June graduation due in Registrar's Office	
Spring-semester classes begin	Feb 3 ..... Mon
Subjects of Master's theses of June candidates due in Dean's Office	Feb 7 ..... Fri
University Faculty Assembly Meeting	Feb 11 ..... Tues
Winter Convocation (holiday)	Feb 22 ..... Sat
Spring recess	March 25–31 ..... Wed–Tues
Graduate Record Examination	April 11 ..... Sat
Master's theses of June candidates due in Dean's Office	May 1 ..... Fri
Last day of spring-semester classes	May 20 ..... Wed
Examination period	May 23–29 ..... Sat–Fri
Memorial Day (holiday)	May 30 ..... Sat
Baccalaureate Service	June 7 ..... Sun
Commencement	June 7 ..... Sun
SUMMER SESSIONS:	
Registration for eight-week term	June 22 ..... Mon
Classes begin	June 23 ..... Tues
Independence Day (holiday)	July 4 ..... Sat
Eight-week term ends	Aug 14 ..... Fri
REGISTRATION FOR FALL SEMESTER 1964–65	Sept 17–19 ..... Thurs–Sat

* Thursday and Friday, from 12:00 to 8:00 P.M.; Saturday, from 10:00 A.M. to 1:00 P.M.


THE
GEORGE WASHINGTON
UNIVERSITY
Union Station
Folger
Shakespeare
Library
Supreme Court
THE CAPITOL
Library of Congress
Treasury Dept
Archives Bldg.
Federal
Trade Comm
Dept of Justice
Post Office
Dept
WHITE
HOUSE
Executive
Office Bldg
George Washington
University Hospital
National Gallery of Art
Dept of
Commerce
Dept of Labor
Natural History Bldg
Dept of
Interior
Smithsonian
Institution
Voice of America
Dept of Health Education and Welfare
Dept of State
Pan American Union
Dept of Agriculture
Nat Academy of Science
Washington
Monument
Lincoln Memorial
POTOMAC
RIVER
TIDAL
BASIN
N

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

INTRODUCTORY

Columbian College was founded in 1821. James Monroe, then President of the United States, aided in obtaining the charter from Congress which established "The Columbian College in the District of Columbia" for the "sole and exclusive purpose of educating youth in the English, learned and foreign languages, the liberal arts, sciences and literature." Columbian College became Columbian University in 1873. When Congress authorized changing the name to The George Washington University, the name "Columbian College" was given to the college of liberal arts and sciences. In 1961 the name was changed to Columbian College of Arts and Sciences.

Incoming liberal arts and science freshmen and all transfer students of less than junior class standing are registered in the lower division of Columbian College. The lower division also provides the first two years of the prelegal and premedical programs, the preprofessional work required for admission to the schools of Pharmacy; Education; and Government, Business, and International Affairs; and two-year terminal curricula in Accounting, Physical Sciences, and Secretarial Studies. The lower division is primarily concerned with providing (1) the personal and academic guidance needed by beginning college students and (2) the broad cultural foundations in language and literature, science, and social studies on which major field specialization in the upper division is built.

The upper division of Columbian College offers programs leading to Bachelor's degrees in the liberal arts and sciences; the graduate division offers programs leading to the Master's degrees.

Students beginning the first year of graduate study who plan to work toward the degree of Doctor of Philosophy may be given provisional status in the Graduate Council. However, if the student prefers and if the Dean of the Graduate Council so advises, he may register for a Master's degree in Columbian College of Arts and Sciences during the first year and apply for transfer to the Council upon completion of the Master's work.

THE COLUMBIAN COLLEGE PROGRAM

The Columbian College program is a contemporary application of the historic liberal arts tradition. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

ADMISSION

The University accepts both men and women. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

APPLICATION FOR ADMISSION AND READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone: FE 8-0250, extension 344. The application for admission, with a $15 application fee and a recent, signed photograph, should be returned to the Office of the Director of Admissions.

Application for admission or readmission for degree candidacy, together with all required credentials, should be received by July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions to insure consideration.

No application will be considered after September 1 for the fall semester, January 10 for the spring semester, and June 1 for the Summer Sessions except in extraordinary circumstances, at the discretion of the Director of Admissions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal, with the request that the completed form be mailed directly *to the Office of the Director of Admissions*

An applicant who has attended one or more institutions of higher learning must request each registrar to mail directly *to the Office of the Director of Admissions* a transcript of his record, *even though credits were not earned.* If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Office of the Director of Admissions.

TEST INFORMATION

The requirement of tests for Columbian College applicants coming directly from secondary school is specified on page 12. The appropriate report of the Graduate Record Examination, when available, should accompany application for admission to graduate degree candidacy.

Arrangement for tests is the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, not less than one month before the date of the test. The Bulletin of Information, obtainable without charge, contains descriptions of the tests as well as rules regarding applications, fees, reports, and the conduct of the tests; lists of examination centers; examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington 6, D. C.

College Entrance Examination Board tests are given at a large number of examination centers throughout the United States, including Washington, D. C.

If the Committee on Admission and Advanced Standing prescribes other tests, necessary instructions will be sent to the applicant by the Director of Admissions.

ADANCED STANDING

Credit for Advanced Placement Examinations

Up to 30 semester hours of credit may be granted for college-level courses in an approved secondary school, if substantiated by satisfactory performance in the Advanced Placement Examination. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, N. J.

The applicant must request the examining service to submit the test papers and scores to the office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the courses of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

Credit from Higher Institutions

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University. It may be allowed provisionally, and it may be withdrawn for subsequent poor work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

The student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of the Director of Admissions. (See closing dates for application for admission, page 10.) If he applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

TRANSFER WITHIN THE UNIVERSITY

For information concerning transfer from one college, school, or division to another within the University, see page 26.

ENTRANCE REQUIREMENTS*

Good character and an academic background appropriate for the program of studies contemplated are required.

* Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

LOWER DIVISION

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units* which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

2. The prinicpal's statement that the applicant is prepared to undertake college work.

3. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test. Applicants are urged to submit scores on two additional achievement tests in subjects reflecting their major interests.

It is recommended that the examinations be taken in December or January. Scores on tests taken in the Junior year may be submitted. Arrangement for tests should be made with the Educational Testing Service, 20 Nassau Street, Princeton, N. J., not less than one month before the date of the test. In applying for the test, the student should specify that the scores be sent to the Director of Admissions, The George Washington University, Washington 6, D. C.

The Committee on Admission and Advanced Standing will consider the adequacy of the qualifications of an applicant who, because of unusual circumstances, does not present all the formal requirements stated above. The Committee may prescribe appropriate tests.

UPPER DIVISION

Bachelor of Arts.—Sixty-four hours of academic work based on the *Arts and Letters* curriculum in the lower division, or the equivalent (see page 31).

Bachelor of Science.—Sixty-four hours of academic work based on the *Science* curriculum in the lower division, or the equivalent (see page 32).

Bachelor of Science in Medical Technology.—Sixty-four hours of academic work including Biology 1–2†, Chemistry 11–12, and Microbiology 112, or the equivalent (see page 33).

GRADUATE DIVISION

An approved Bachelor's degree from an accredited higher institution; an appropriate distribution of courses; and a superior quality of work in the major field are required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he may be required to submit scores on the Graduate Record Examination or take extra work.

Applications for admission must be approved by the department and by the Dean.

Master of Arts.—A Bachelor of Arts degree at this University with a major in the chosen field, or the equivalent.

Master of Science.—A Bachelor of Science degree (Columbian College) at this University with a major in the chosen field, or the equivalent.

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

† An interdepartmental course offered by the departments of Botany and Zoology.

Master of Fine Arts (1) *in the field of Painting or Sculpture.*—A Bachelor of Arts degree at this University with a major in drawing and painting, sculpture, or commercial art, or the equivalent. (2) *In the field of Dramatic Art.*—A Bachelor's degree from an accredited college or university. Desirable undergraduate background includes courses in literature, drama, and the theater. Applicants with academic deficiencies may be enrolled in the program subject to the satisfactory completion of prescribed courses.

SPECIAL STUDENTS

Some students not immediately eligible for unqualified degree candidacy may be admitted as special students to demonstrate ability in a prescribed program, or to make up whatever deficiencies may exist.

The schedule of a special student is made up of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Adviser. If the undergraduate student has not completed the language requirements of his chosen curriculum at the time of admission, he must include 3 semester hours of language in each 12 hours of work until the requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

All special students are expected to consult with an adviser in Building P at least twice a semester.

Upon satisfactory completion of the prescribed program, the student is automatically assigned full status in the appropriate (lower, upper, or graduate) division of the College. Work satisfactorily completed as a special student is normally applicable to the appropriate degree at the undergraduate level.

The terms of admission of a student attempting to qualify for graduate degree candidacy specify the amount of work applicable to the degree program if the student is later admitted to candidacy.

A student at the undergraduate level who fails to maintain a quality-point index of 2.00 may be dropped.

REGISTRATION

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions.

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of Admissions.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration.* Allowance of credit for work done concurrently will be at the discretion of the appropriate Committee on Admission and Advanced Standing.

IN RESIDENCE REGISTRATION

A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his return unless during his absence he maintains "in residence" status by paying the appropriate fee, see page 15. For the purpose of this regulation the summer term will be disregarded.

The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

TIME AND PLACE OF REGISTRATION

Registration is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester*, September 19 and 20, from 12:00 to 8:00 P.M.; September 21, from 10:00 A.M. to 1:00 P.M. *Spring semester*, January 30 and 31, from 12:00 to 8:00 P.M.; February 1, from 10:00 A.M. to 1:00 P.M.

FEES AND FINANCIAL REGULATIONS

Fees paid by students cover only a portion of the cost of instruction and of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

By authorization of the Board of Trustees, the following fees have been adopted for the academic year 1962–63:

Tuition Fees

For undergraduate and Master's study	
Full-time program (15 hours or more), each semester*	$500.00
Part-time program, for each semester hour*	33.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

Associate in Arts or Associate in Science	10.00
Bachelor's or Master's degrees	25.00

* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered "in residence" during this period. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

Fee for Binding Master's Thesis	6.00

Special Fees

Application fee, nonrefundable	15.00
Application for room reservation fee (see page 50)	100.00
Admission tests (when required)	6.00–12.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree at the time of registration for the final semester of study (excluding summer sessions)	10.00
Late-registration fee, for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements.* Due and payable on the official days of registration	33.00
For special physical examination	2.00
For each examination to qualify for advanced standing and for each special examination	5.00
English test for foreign students (when required)	5.00
Laboratory checkout fee, for failure to check out of chemistry and pharmacy laboratory by the date deadline set by the instructor	3.00
Transcript fee, for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Services. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees are due and payable in advance at the time of each registration.

The student may sign a contract at the time of each registration for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day† in November; one-third on the first working day† in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day† in March; one-third on the first working day† in April.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

* Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

† The University work week is Monday through Friday, inclusive.

A student who fails to meet payments when due, but pays his fees within the following two weeks of the date on which payment is due, is charged a $2 service fee. A student who fails to meet payments within these two weeks after payment is due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a $5 reinstatement fee.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", page 25).

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

* The University work week is Monday through Friday, inclusive.

In no case will a refund be made of the first third of the total tuition charges. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry or pharmacy who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a $3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS, GRADUATE SCHOLARSHIPS, AND ASSISTANTSHIPS

Unless otherwise specified, applications should be submitted not later than March 1 preceding the period for which the award is to be made. They should be directed to the chairman of the department or the dean of the school concerned and addressed to the George Washington University, Washington 6, D. C.

University Teaching Fellowships.—Assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to $2,000 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed $550. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the chairman of the department of instruction concerned.

Graduate Teaching Assistantships.—Open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $2,000 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed $665. Application should be made to the chairman of the department of instruction concerned.

Gilbert Grosvenor Teaching Fellowship (1961).—Established by the National Geographic Society in honor of Dr. Grosvenor, an honorary trustee of the University. Awarded to a doctoral candidate in the field of human geography, with stipend up to $1,700 and tuition fee for work leading to and including the General Examination or the Final Examination, as appropriate. Application forms are available in the Department of Geography and Regional Science.

Isbella Osborn King Research Fellowships (1927).—By bequest, fellowships varying in amount from $750 to $3,000 are offered in the biological sciences to foster research for which the libraries and scientific establishments in Washington provide special facilities.

National Defense Graduate Fellowships.—Under the National Defense Education Act, fellowships are available at this University in Germanic Languages and Literatures and in Romance Languages and literatures at $2,000 (with an increase of $200 each for the second and third years) plus $400 a year for each dependent; tuition is waived. Application should be made to the Graduate Council not later than February 15.

National Science Foundation Cooperative Graduate Fellowships.—Fellowships at $2,400 for twelve months or $1,800 for nine months, with tuition waived, are available in the mathematical, physical, medical, biological, and engineering sciences and in certain other fields regarded as employing scientific methods. Application should be made to the Graduate Council not later than November 1 for the following year.

Thomas Bradford Sanders Fellowships (1928).—Fellowships in departments of science, varying in amount from $900 to $1,500 plus tuition, established by bequest of Addie Sanders in memory of her brother.

SCHOLARSHIPS AND PRIZES

The following scholarships and prizes are limited to students in Columbian College of Arts and Sciences. The University offers many others which are open to Columbian College students. A special bulletin containing a complete list and full information may be obtained from the Chairman of the Commitee on Scholarships, The George Washington University, Washington 6, D. C.

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded.

Scholarship application should be made in writing on or before April first for the following academic year and, unless otherwise specified, should be addressed to the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C. Awards are made during the month of April. All scholarships begin with the fall semester.

Alpha Zeta Omega Scholarship (1950).—A $500 scholarship, available in $100 amounts at the beginning of each academic year, established by Pi Chapter awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia, nearby Maryland, or Virginia who intends to complete the requirements for the degree of Bachelor of Science in Pharmacy. Application should be made to the Dean of the School of Pharmacy.

Alumni Scholarships.—Five scholarships are available each year in the lower division of Columbian College of Arts and Sciences, upon recommendation of alumni or regional alumni clubs, to outstanding graduates of accredited high schools outside the Metropolitan area of Washington, D. C. These scholarships provide full tuition for four academic years, beginning with the fall semester (excluding summer work and special fees). The student must maintain a *B* average. For information write to the Director of Alumni Relations.

Byron Andrews Scholarship (1920).—A partial scholarship established by Bell Fisk Andrews in memory of her husband. Available to "ambitious and needy students, who desire to pursue courses in English, Latin, journalism, history, literature, or political science".

Debate Scholarship.—Offered annually to a high school senior who intends to enter the lower division of Columbian College of Arts and Sciences and complete a Bachelor's program at this University.

The award covers full tuition for four academic years (excluding summer work and special fees), provided the holder maintains a *B* average and participates in the official University debate activities.

The scholarship is awarded on the basis of (1) participation in the Annual George Washington University High School Discussion Conference and (2) participation in the Annual George Washington University High School Debate Tournament. Promising high school seniors in and outside the Washington Metropolitan Area, who have demonstrated outstanding ability in interscholastic speech activities, will also be eligible for consideration.

Inquiries should be directed to the Department of Speech.

District of Columbia Pharmaceutical Association Scholarship (1954).—A $500 scholarship awarded annually to a member of the graduating class of one of the public or parochial high schools of the District of Columbia, nearby Maryland or Virginia, who intends to complete the requirements for the degree of Bachelor of Science in Pharmacy. Application should be made to the Dean of the School of Pharmacy.

Robert Farnham Scholarship (1871).—Established by Mrs. Robert Farnham. Tuition aid for a student in Columbian College of Arts and Sciences.

Georgetown Business and Professional Woman's Club Scholarship (1958).—A partial scholarship for a woman student in the field of science.

Anna Spicker Hampel Scholarship (1949).—Established by Evelyn Hampel Young in memory of her mother, provides tuition aid for a young married woman in the School of Education or Columbian College of Arts and Sciences.

Elma Lewis Harvey Scholarship (1921).—A partial scholarship established by Emma Elizabeth Harvey in memory of her daughter. Awarded every four years, or as often as vacant, to a young woman in Columbian College of Arts and Sciences of the Protestant faith and the Caucasian race, selected for scholarship and moral qualifications.

High School Scholarships.—The Board of Trustees offers annually thirty-four scholarships to graduates of accredited high schools in the following Washington Metropolitan areas: District of Columbia; Fairfax-Falls Church; Alexandria City; Mont-

gomery, Prince Georges, and Arlington counties. One of these scholarships, designated as the *Amos Kendall Scholarship*, was established in 1869 by the Honorable Amos Kendall.

These scholarships are awarded to students who intend to enter the lower division of Columbian College of Arts and Sciences and complete a Bachelor's program at this University.

The award covers full tuition for four academic years (excluding summer work and special fees). To retain a high school scholarship, an average of *B* and a satisfactory standard of deportment must be maintained.

Candidates must be indorsed by principals and counselors of participating high schools and reported as nominees to The George Washington University Committee on Scholarships not later than February 1. Direct inquiries to high school counselor.

Howard Henry Howlett Scholarships (1962).—Bequest of Dr. Howlett for scholarship aid to "deserving students" in the upper division of Columbian College of Arts and Sciences.

Kappa Alpha Theta Scholarship (1950).—A $500 scholarship established by the Washington alumnae for the training of a clinician in speech correction.

Kappa Kappa Gamma Scholarship (1959).—An annual $500 scholarship established by the Washington alumnae for a student planning to follow the profession of speech correction.

Newspaper Scholarships.—One scholarship is available each year to a candidate recommended by each of the following newspapers: *The Washington Daily News*, *The Washington Post*, and *The Evening Star*. The holder must be an employee of the newspaper. These scholarships are valid for four academic years, provided the holder continues in the employ and is recommended by the newspaper, and maintains a satisfactory academic record and a high standard of deportment. They cover tuition but do not include any special fees.

Mary Lowell Stone Scholarship (1893).—A partial scholarship available to a woman student of science in Columbian College of Arts and Sciences.

Charles Clinton Swisher Scholarships (1941).—Scholarships of $500 and $300, respectively, by bequest of Professor Swisher. Available under certain conditions, to students of medieval history.

University Hospital Scholarships in Medical Technology.—Ten scholarships are available, each to cover the cost of 24 semester hours of the 30 in the last year of the curriculum leading to the degree of Bachelor of Science in Medical Technology. Inquiries should be directed to the Department of Pathology, The George Washington University Hospital.

Barbara G. Wendt Scholarship (1961).—Established by the Presidential Chapter of the National Secretaries Association (International), of Washington, D. C., in memory of a former member. Annual tuition aid for a student in Secretarial Studies.

Ellen Woodhull Scholarship (1919).—Tuition aid for a student in Columbian College of Arts and Sciences.

American Institute of Chemists Prize.—A medal and a one-year subscription to *The Chemist* awarded annually to the graduating student, majoring in chemistry, who excels in scholarship, integrity, and leadership.

Byrne Thurtell Burns Memorial Prize.—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Chi Omega Prize.—Awarded annually by Phi Alpha Chapter to the woman in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

FINANCIAL AID

STUDENT EMPLOYMENT

Graduate and undergraduate student assistantships are available in several departments of the University. Application should be made to the chairman of the department of instruction concerned.

The Placement Office maintains a registry of positions available in many fields of work and refers qualified applicants for consideration.

LOAN FUNDS

The following loan funds are available. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have made available a fund for short-term loans to students to provide for partial payment of tuition. Applications for these loans shall be made three days prior to the dates on which tuition installments are due.

National Defense Student Loan Fund.—This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given those applicants who express a desire to teach in elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Treasurer no later than (1) for the *fall semester*—June first for students currently registered in the University and July first for entering students; (2) for the *spring semester*—December first; (3) for the *Summer Sessions*—May first.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

REGULATIONS

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return. (See "In Residence Registration", page 14.)

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

The student is held responsible for all the work of the course in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations, are met.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor.

SCHOLARSHIP

A student who fails to maintain the scholarship requirements of Columbian College of Arts and Sciences may be dismissed from the University.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol

I (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

Graduate.—For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete).

THE QUALITY-POINT INDEX

Undergraduate scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

EXAMINATIONS

Examinations are scheduled at the end of each semester or at the completion of the course.

USE OF CORRECT ENGLISH

The use of correct English, oral and written, is required in all courses. Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

HONORS

Lower Division Honor Roll.—The name of every lower division student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University is placed on the honor roll and published. To be eligible, the student must have completed no less than 15 semester hours. (A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.)

Dean's List.—The name of every student who makes a quality-point index of 3.50 or higher on a minimum of 15 semester hours of work taken in any one semester is placed on the Dean's List for that semester.

With distinction.—A Bachelor's degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded by the Faculty to the recipient of a Bachelor's degree for outstanding achievement in the major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science 101 and 102 with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at an Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet is authorized to wear a "Distinguished Cadet" badge above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate."

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for a Bachelor's de-

gree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

PROBATION

A student must maintain a quality-point index of at least 2.00, or be placed on probation. He remains on probation as long as his index is below 2.00. The student whose average is 2.00 or below for work undertaken during this probationary period is suspended. The student whose over-all quality-point index is still below 2.00 but whose average for work undertaken during the probationary period is above 2.00 may be continued on probation by the Committee on Scholarship.

SUSPENSION

A student whose index falls below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors file in the Office of the Dean the names of freshman and sophomore students who are doing work of *D* grade or lower. A notice of Warning is sent to the student and a copy filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of 15 semester hours.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations", pages 16 and 17.)

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

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* The University work week is Monday through Friday, inclusive.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, or Division.—A student may not change or drop courses (see "withdrawals", above) or change his status to that of auditor except with the approval of the Dean.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements of the course of study to which the change is made must be met.

Transfer within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the lower division of Columbian College in a regular baccalaureate program, application for transfer must be made to the Director of Admissions on the form provided by his office.

Students wishing to transfer from the Division of University Students to a degree-granting college or school of the University should note that a maximum of 45 semester hours will be accepted in transfer.

Students transferring within the University should note that in all undergraduate divisions, except the College of General Studies, 30 semester hours, including *at least 12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill. (For residence requirements for the Associate's degrees in the lower division of Columbian College, see page 30.)

CREDIT

Credit is given only after registration for a course and satisfactory completion of the required work, or upon the assignment of advanced standing.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. No charge is made for the first copy; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a person who does not have a clear financial record.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this Uni-

versity must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

In-residence Status.—A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his readmission, unless during his absence he maintains "in residence" status by paying the residence fee, see page 15.

The student who has completed tuition requirements, but whose graduation is deferred for any reason must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

Application for Graduation.—Application should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year. No applications will be accepted after the date stated in the calendar. Students expecting to complete, during the Summer Sessions, requirements for degrees to be formally conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Graduate Record Examination.—All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination (see page 39).

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Graduation in Absentia.—Application for graduation *in absentia* must be submitted to the Dean.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for over-

night use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

CLASSIFICATION OF STUDENTS

A *freshman* is a student who is in the process of completing 32 semester hours, including 18 hours of his curriculum requirements.

A *sophomore* is a student who has completed between 32 and 64 hours, including 18 hours of his curriculum requirements.

A *junior* is a student who has completed between 64 and 94 hours and filed the declaration of his major, approved by his adviser, in the Office of the Dean.

A *senior* is a student who has completed between 94 and 124 hours, including at least 6 hours of second-group work in his major.

A *master in course* is a student who has satisfactorily completed the work for the Bachelor's degree and filed his approved program of study in the Office of the Dean.

A *special student* is a student not immediately eligible for unqualified degree candidacy but admitted to Columbian College to demonstrate ability in a prescribed program or to make up deficiencies.

THE LOWER DIVISION

ADVISORY SYSTEM

Members of the Faculty, selected for their knowledge of freshman-sophomore requirements and student programs, advise students in making up their programs of study for each semester. A separate staff of experienced advisers under the chairmanship of the Dean assists those students who find it difficult to make adjustments to college life because of scholastic or other reasons. Students who are "warned" or who are on probation may be required to consult these advisers at regular intervals. Students are encouraged to consult any member of the Advisory Staff or their instructors about college problems at any time.

Copies of notices of "warning" or probation are sent to the parents or guardians of students on request, and the Dean and members of the Advisory Staff are available for consultation with parents or guardians concerning student problems.

Preprofessional Students.—Preprofessional students who intend to transfer after the sophomore year to the School of Education; the School of Pharmacy; or the School of Government, Business, and International Affairs are registered in the lower division to complete the curriculum requirements specified by each professional school. Such students are assigned special advisers to assist them in planning their programs.

SCHOLASTIC-APTITUDE TESTS

Students admitted to the lower division of Columbian College may be required to take the scholastic-aptitude tests of the University.

REQUIRED PLACEMENT EXAMINATIONS

English.—Special placement examinations, required of all entering freshmen, are conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

Foreign Languages.—A standardized placement examination is required of all entering students who wish to continue in college the language begun in high school (French, German, Russian, or Spanish). Upon completion of the examination, assignment is made to the appropriate course.

FIRST- AND SECOND-GROUP COURSES

A freshman or sophomore may not take second-group courses (courses numbered 101–200) without the written permission of the Instructor and of the Dean*. A student is not permitted to postpone a required first-group course in order to take a second-group course for elective credit. The principle that first-group courses must

* Students enrolled in the two-year terminal curriculum in Accounting, the Medical Technology curriculum, and the pre-Pharmacy curriculum may take those second group courses which are specified as part of their freshman-sophomore curricula without first obtaining the written permission of the instructor or the Dean.

be taken in the freshman and sophomore years, and advanced courses in the junior and senior years in Columbian College and the professional schools, is rigidly adhered to in approving student programs. No freshman or sophomore on probation may take second-group courses without the written permission of the Committee on Scholarship.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

The residence requirement for an Associate's degree is 15 hours.

SCHOLARSHIP

A quality-point index of 2.00 is required.

CURRICULUM

The satisfactory completion of 64 semester hours is required, as outlined in one of the curricula described below.

Except for students intending to apply for the combined degrees of Bachelor of Arts and Doctor of Medicine or the degree of Bachelor of Science in Medical Technology, not more than 12 hours of professional courses may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Lower division students electing professional courses under this rule must obtain the approval of the Dean before registration.

Physical Education.—Freshmen and sophomores (except those enrolled in the Physical Education for Men curriculum) are required to take Physical Education 1–2 and 11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Air Force ROTC cadets and a limited number of freshman and sophomore women may substitute Air Science 1–2 and 11–12 for the physical education requirement.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean.

Students exempt from the physical education requirement will be required to substitute four hours of elective.

A student entering the University with advanced standing is not exempt from the physical education requirement unless he has satisfactorily met the requirement elsewhere.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

Foreign Language.—In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language.

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the requirement by continuing in the same language must take the language placement test (see page 29).

In general, one year of high school language is considered equivalent to one semester of college language.

In some instances foreign languages are required or recommended as preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his lower division program.

English.—Entering students registered in the liberal arts and sciences curricula must follow the sequence of English 1 or 1X, both halves of one of the introductory literature courses, and English 4. This does not apply to students transferring to these curricula or students registering in the preprofessional or vocational curricula.

Examinations for Waiving Curriculum Requirements*

A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

I. CURRICULA IN PREPARATION FOR BACHELOR'S DEGREES

Each of the following curricula comprises the first two years of a standard four-year college course.

All curricula in this group lead to the degree of Associate in Arts.

A. UPPER DIVISION OF COLUMBIAN COLLEGE:

1. ARTS AND LETTERS

The following constitutes the first two years of the Bachelor of Arts curriculum:

		Semester Hours
English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Foreign Language	See pages 30–31 for foreign language requirement	12
Physical Education	See page 30 for statement of requirement	4
Science	Biology 1–2†; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; or Physics 11–12	6–8
Social Studies	Economics 1–2; Geography 51, 52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
Electives‡		22–24
	Total	64

*This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

†An interdepartmental course offered by the departments of Botany and Zoology.

‡See footnote (†) on page 32.

2. SCIENCE

The following constitutes the first two years of the Bachelor of Science and the Bachelor of Science in Medical Technology curricula. Medical Technology students must include Biology 1–2*, Chemistry 11–12, and Microbiology 112:

		Semester Hours
English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Foreign Language	French, German, Russian, or nonscience elective	12
	NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4, German 4, or Russian 4 or by special examination.	
Mathematics	Mathematics 3, 6, or electives	6
	NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra, acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	
Physical Education	See page 30 for statement of requirement	4
Science	Biology 1–2*	8
	Chemistry 11–12, Geology 1–2 or 1 and 12, Physics 11 and 12 or 11 and 14	12–14
Social Studies	Economics 1–2; Geography 51, 52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
Elective†		2–4
	Total	64

3. PREMEDICAL

Premedical students may follow either the Arts and Letters or the Science curriculum above in fulfilling the first 60 semester hours of the premedical requirement. Each premedical program must be approved by the premedical adviser.

A minimum of 90 semester hours applicable toward a degree in an approved College of Arts and Sciences including:

	Semester Hours
Biology (including 4 hours of laboratory)	8
A course in either general biology or zoology	
Chemistry:	8
Inorganic (including 4 hours of laboratory)	
Qualitative analysis may be counted as part of this requirement	6–8
Organic (including laboratory)	
The equivalent of a one-year college course	6
English Composition and Literature	8
Physics (including at least 2 hours of laboratory)	

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A

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* An interdepartmental course offered by the departments of Botany and Zoology.

† It is suggested that electives include one of the following courses: Art 51–52, 71–72; Philosophy 51–52; Religion 9–10, 59–60.

Students enrolled in the Medical Technology program should elect Microbiology 112.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Secretarial Studies; credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimal 90 semester-hour requirement, the majority of applicants are found to be better prepared for the study of medicine after four years of college work.

4. MEDICAL TECHNOLOGY

The degree of Bachelor of Science in Medical Technology is offered by Columbian College in collaboration with the Department of Pathology and the University Hospital. Candidates should follow the Science curriculum in the lower division, including specifically Biology 1–2*, Chemistry 11–12, and Microbiology 112. See page 42 for a description of the course and a statement of further requirements. Specific degree requirements are stated under the Department of Pathology following the listing of the Staff of Instruction.

B. SCHOOL OF PHARMACY:

The following constitutes the first two years of the five-year Bachelor of Science in Pharmacy curriculum of the School of Pharmacy.

		Semester Hours
English Composition and Literature	English 1 or 1X, 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52; English 4	12
Physical Education	See page 30 for statement of requirement	4
Science	Chemistry 11–12, 21, 22; Physics 11, 12; Biology 1–2*	30
Economics	Economics 1	3
Mathematics	Mathematics 3 or elective	3
Elective†		12
	Total	64

C. SCHOOL OF EDUCATION:

1. EDUCATION

The following constitutes the first two years of the Bachelor of Arts in Education curriculum of the School of Education:

English	English 1 or 1X, 2	6
	English 51–52, 71–72, or 91–92	6
Foreign Language	(French, German, Latin, Russian, or Spanish.) See pages 30–31 for foreign language requirement	12
Physical Education	See page 30 for statement of requirement	4
Science	Three semesters (two in biological science and one in physical science or vice versa) to supplement senior high school courses in those fields and chosen from Biology 1–2*; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; Physics 11, 12. (A student offering for admission two or more acceptable senior high school units in the above areas of science may be exempted from one semester of this requirement.)	9–12
Mathematics	Two semesters to supplement senior high school courses, chosen from Mathematics 3, 6, 9, 10	6

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
Social Studies	History 71–72; Political Science 1 and 9, 1 and 10, or 9–10	6
	Economics 1–2; Geography 51–52; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, 9–10; Religion 59–60; Anthropology 1 and Sociology 2. (A student offering for admission two or more acceptable senior high school units in social studies may be exempted from this requirement.)	6
Speech	Speech 1 (or 11, if the Department so advises)	3
Psychology	Psychology 1, 22	6
Electives may be selected in lieu of the various exemptions.		
	Total	64–67

2. PHYSICAL EDUCATION FOR MEN

The following constitutes the first two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

English	English 1 or 1X, 2	6
Science	Biology 1–2* (Freshman year)	8
	Chemistry 3–4 (Sophomore year)	8
Social Studies	History 71–72; Political Science 1 and 9, 1 and 10, or 9–10	6
	Anthropology 1 and Sociology 2	6
Major Prerequisites	Physical Education 41, 43–44, 47; Speech 1 or 11 (Freshman year)	10
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		2
	Total	64

3. PHYSICAL EDUCATION FOR WOMEN

The following constitutes the first two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

English	English 1 or 1X, 2	6
	English 51–52, 71–72, or 91–92	4
Physical Education	1–2, 11–12	8
Science	Biology 1–2*	8
	Chemistry 3–4	
Social Studies	History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6
		4–6
Major Prerequisites	Physical Education 43–44	6
	Physical Education 49, 50	4–6
	Physical Education 51–52	6
	Psychology 1, 22	6–10
Academic Electives		
	Total	64

* An interdepartmental course offered by the departments of Botany and Zoology.

D. SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS:

1. GOVERNMENT AND BUSINESS

a) Accounting and Business Administration

The following constitutes the first two years of the Bachelor of Business Administration curricula in Accounting and in Business Administration of the School of Government, Business, and International Affairs:

		Semester Hours
Accounting	Accounting 1–2	6
English Composition	English 1 or 1X, 2	6
*Foreign Language or Literature	English 51–52, 71–72, 91–92; French 3–4 or 51–52; German 3–4 or 51–52; Russian 3–4 or 91–92; Spanish 3–4 or 51–52	6
Mathematics	Mathematics 15–16	6
Science	Biology 1–2†; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; or Physics 11–12	6–8
Social Studies	Economics 1–2	6
	Political Science 9–10	6
	Psychology 1	3
	Anthropology 1, Sociology 2, or Psychology 8	3
Statistics	Statistics 51	3
Physical Education	See page 30 for statement of requirement	4
Elective‡	(Speech is recommended, students interested in Foreign Commerce include Geography 52)	7–9
	Total	64

b) Public Affairs

The following constitutes the first two years of the Bachelor of Arts in Government curriculum in Public Affairs of the School of Government, Business, and International Affairs:

English	English 1 or 1X, 2	6
Foreign Language	See pages 30–31 for foreign language requirement	12
Mathematics, Science	Biology 1–2†, Chemistry, Geology, Mathematics, Physics, or Statistics	6 to 8
Physical Education	See page 30 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Elective‡	(To satisfy minimum required credits)	10 to 12
	Total	64

c) Business and Economic Statistics

The following constitutes the first two years of the Bachelor of Business Administration curriculum in Business and Economic Statistics of the School of Government, Business, and International Affairs:

Accounting	Accounting 1–2	6
Economics	Economics 1–2	6

*This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.
†An interdepartmental course offered by the departments of Botany and Zoology.
‡Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
English	English 1 or 1X, 2	6
Foreign Language	See pages 30–31 for foreign language requirement	12
Mathematics	Mathematics 21, 22, 23	9
Physical Education	See page 30 for statement of requirement	4
Political Science	Political Science 9–10	6
or Philosophy	Philosophy 51–52	6
Statistics	Statistics 51 or 91, 52	9
Elective†		
	Total	64

2. INTERNATIONAL AFFAIRS

The following constitutes the first two years of the Bachelor of Arts in Government curriculum in International Affairs of the School of Government, Business, and International Affairs:

English	English 1 or 1X, 2	6
Foreign Language	See pages 30–31 for foreign language requirement	12
Mathematics, Science	Biology 1–2*, Chemistry, Geology, Mathematics, Physics, or Statistics	6–8
Physical Education	See page 30 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Elective†	(To satisfy minimum required credits. Students interested in Foreign Service include Geography 52)	10–12
	Total	64

II. TERMINAL CURRICULA

In addition to the above curricula, the lower division offers the following two-year terminal courses.

The curricula in Accounting and Secretarial Studies lead to the degree of Associate in Arts. The curriculum in Physical Sciences leads to the degree of Associate in Science.

1. ACCOUNTING

The required work may be completed in two years on a full-time basis or in three years on a part-time basis, with the approval of the adviser.

Accounting	Accounting 1–2, 101, 111, 121–22, 161, 171, 181, 191, 193	33
Business Administration	Business Administration 131, 161, 162	9
Economics	Economics 1–2	6
English	English 1 or 1X, 2	6
Physical Education	See page 30 for statement of requirement	4
Elective	To be selected with the approval of the adviser	6
	Total	64

2. PHYSICAL SCIENCES

This curriculum is designed for part-time students who do not wish to extend their collegiate education beyond 64 semester hours of work. All other students

* An interdepartmental course offered by the departments of Botany and Zoology.
† Credit is not given for courses elected in Physical Education or Secretarial Studies.

interested in the study of physical science should follow the Columbian College Science curriculum.

Applied Science	Applied Science 3	3
Chemistry	Chemistry 11, 12, 21	12
English	English 1 or 1X, 2, 11	9
Mathematics	Mathematics 3, 6, 21, 22, 23, 24	12–18
Physical Education	See page 30 for statement of requirement	4
Physics	Physics 11, 14, 15, 16	12
Elective	(Speech 1, Economics 1–2 suggested)	6–12
	Total	64

3. SECRETARIAL STUDIES

English	English 1 or 1X, 2	6
	English 51–52, 71–72, 91–92, Russian 91–92	6
Physical Education	See page 30 for statement of requirement	4
Secretarial Studies*	Secretarial Studies 1, 2, 11, 12, 15, 16, 51, 54	24
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 1 and 9, 1 and 10, or 9–10, or Anthropology 1 and Sociology 2	6
Accounting	Accounting 1	3
Speech	Speech 11	3
Elective	To be selected with the approval of the adviser	12
	Total	64

UPPER DIVISION

A student with 64 or more acceptable semester hours, whether earned in this University or transferred from another institution, is registered in the upper division of Columbian College. It is assumed that he has met the requirements of the lower division *Arts and Letters* or *Science* curriculum. If he has not, he must begin to make up his deficiencies immediately upon admission and continue to carry courses to this end until all requirements are met.

THE BACHELOR'S DEGREES

Columbian College through its upper division offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Medical Technology.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

* Qualified students, upon the approval of the adviser or the satisfactory completion of a placement test, may waive Secretarial Studies 1, 11, and 12. Other courses, approved by the adviser, will be substituted.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the upper division of Columbian College. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

For the regulation governing students who are absent from the University for one semester or more, see page 14.

CURRICULUM REQUIREMENTS

The curriculum requirements for the Bachelor's degrees include at least 60 semester hours beyond those of the appropriate lower division curriculum and the satisfactory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least 24 of the last 60 hours counted toward the Bachelor's degree must be taken in subjects* not included in the major field or department. The student should consult his major adviser at each registration concerning his choice of electives.

Except for premedical and medical technology students, not more than 12 hours of professional courses may be included in the undergraduate program. The election of professional courses must be approved by the Dean's Council prior to registration. Ordinarily courses in Physical Education, Secretarial Studies, and technical courses in Education will not be approved toward a degree.

A change in degree candidacy (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the Dean. The degree requirements effective at the time the change is approved must be met.

Each student must select and file with the Dean a choice of major upon entering the upper division. He may change the major only with the consent of the Dean and of the department or committee concerned, and must meet the requirements for the new major which are in effect at the time the change is approved.

First-group courses may be required as prerequisites to the major, but because of their introductory character they may not be counted as part of such programs. (See "Explanation of Course Numbers.")

Students transferring from other institutions or from other schools, colleges, or divisions in this University with major requirements wholly or substantially met must complete satisfactorily at least 12 semester hours of approved work in the major field in the upper division of Columbian College. This work will count as part of the minimum residence requirement.

Examination for Waiving Curriculum Requirements.—A required course may be waived and admission to an advanced course granted by the satisfactory passing of a waiver examination prescribed by the department concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Written

* Anthropology, Art, Biology, Botany, Chemistry, Classical Languages and Literatures, Economics, English, Geography and Regional Science, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, Speech, Statistics, Zoology.

request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

INDEPENDENT STUDY PLAN

A junior or senior of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the department or departments concerned. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction.

GRADUATE RECORD EXAMINATIONS

During the final semester of the senior year students in Columbian College are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities.

The examinations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the summer sessions should take the examination in the Spring Session. Dates of the examinations are announced in the *Schedule of Classes*.

Each senior must register in the Office of the Dean for the Graduate Record examination when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

BACHELOR OF ARTS

The work of the junior and senior years, including a major in one of the following fields, must be approved by the major adviser and by the Dean.

Major Fields.—American Thought and Civilization; Anthropology; Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, (4) Commercial Art, and (5) Ceramics; Biology; Botany; Chemistry; Economics; English Literature; French Language and Literature; Geography; Geology; Germanic Languages and Literatures; History; Journalism; Latin; Latin American Civilization; Mathematical Statistics; Mathematics; Music (1) Music History and Literature, (2) Music Theory, and (3) Applied Music; Philosophy; Physics; Political Science; Psychology; Regional Science; Religion; Russian; Sociology; Spanish American Literature; Spanish Language and Literature; Speech (Speech or Dramatic Art); Urban and Regional Development; Zoology.

Combined Degrees of Bachelor of Arts and Doctor of Medicine.—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements; (2) fulfill the Arts and Letters curriculum of the lower division requirements (see page 31); (3) accumulate 94 se-

mester hours in the liberal arts, including a minimum of 30 in the upper division of Columbian College; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

BACHELOR OF SCIENCE

The work of the junior and senior years, including a major in one of the following sciences, must be approved by the major department or division and by the Dean.

Biological Sciences: Biology, Botany, Zoology. *Physical Sciences:* Chemistry, Geology, Mathematical Statistics, Mathematics, Physics.

THE UNDERGRADUATE MAJOR

There are two types of undergraduate majors: the field-of-study major and the departmental major.

THE FIELD-OF-STUDY MAJOR

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

The *Field-of-Study Major* requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet on each field is obtainable either from the appropriate adviser or from the Office of the Dean. The prospective student should place himself under the direction of the appropriate adviser immediately upon completing lower division work and beginning his junior year.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: American Thought and Civilization, English Literature, French Language and Literature, History, Latin American Civilization, Mathematical Statistics, Philosophy, Spanish-American Literature, Spanish Language and Literature, Zoology.

The major in American Thought and Civilization and in Latin American Civilization involve studies in two areas, those of Languages and Literatures and of Social

Sciences. The other Field-of-Study Majors, with the exception of the major in Spanish-American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in English Literature, French Language and Literature, History, Mathematical Statistics, Philosophy, Spanish-American Literature, Spanish Language and Literature, or Zoology must elect a Field-of-Study Major.

Proseminar in the Major

A proseminar is offered in each field to help the student in his reading, study, and laboratory exercises acquire a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student has the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

The Major Examination

The Major Examination will normally be taken at the close of the senior year; a student on a limited schedule may take it no earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Committee on Studies, be reexamined at a later regular major-examination period. The Committee on Studies has general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations are held each semester on dates fixed by the department or departments concerned, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer session.

DEPARTMENTAL MAJORS

Departmental Majors, unlike Field-of-Study Majors, are defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned. The Chairman of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Chairman or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. As far as possible the close student-adviser relationship developed in the Field-of-Study Major will be cultivated also in Departmental Majors.

Departmental Majors are offered in the following: Anthropology; Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, (4) Commercial Art, and (5) Ceramics; Biology; Botany; Chemistry; Economics; Geography; Geology; Germanic Languages and Literatures; Journalism; Latin; Mathematics; Music (1) Music History and Literature, (2) Music Theory, and (3) Applied Music; Physics; Political Science; Psychology; Regional Science; Religion; Russian; Sociology; Speech (Speech or Dramatic Art); Urban and Regional Development.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

In cooperation with the University Hospital and the Department of Pathology of the School of Medicine, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology.

A candidate for this degree must complete the Science curriculum in the lower division, including Biology 1–2*, Chemistry 11–12, 21, and 22; and Microbiology 112; fulfill the Columbian College requirements for degrees, including the residence requirement of at least 30 semester hours; complete the 12-month Medical Technology Course in the University Hospital (see the Department of Pathology), which constitutes the major and prepares students for the national certifying examination given by the Registry of Medical Technologists; and maintain throughout the entire course the scholarship level required for graduation.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. (See page 20.) All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of $65 a month is granted during the last 6 months of the fourth year in training.

Admission to the Columbian College degree program does not assure acceptance in the Hospital program.

For information concerning the Medical Technology Course for students not interested in degree candidacy, see the special bulletin.

THE GRADUATE DIVISION

The graduate division offers programs leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

DEFINITION OF THE MASTER'S WORK

The study leading to a Master's degree is a comprehensive survey of an area of knowledge, usually in the student's undergraduate field, with emphasis on scholarly method.

The student must satisfy certain minimum requirements as to preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's examination (together with such other examination involving special skills or techniques as the department or the Committee on Studies may require), is the basis upon which the Master's degree is conferred.

* An interdepartmental course offered by the departments of Botany and Zoology.

MASTER OF ARTS

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History, Anthropology, Art History and Criticism, Biochemistry, Biology, Botany, Chemistry, Economics, English and American Literature, English Literature, French Language and Literature, Geography, Geology, Germanic Languages and Literatures, History, Latin American Civilization, Linguistics, Mathematical Statistics, Mathematics, Microbiology, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, Religion, Religious Education, Sociology, Spanish-American Literature, Spanish Language and Literature, Speech Correction, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

MASTER OF SCIENCE

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy, Biochemistry, Biology, Botany, Chemistry, Geology, Mathematical Statistics, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

MASTER OF FINE ARTS

Graduate work is offered leading to the degree of Master of Fine Arts in the fields of painting and sculpture (see the Department of Art) and in the field of Dramatic Art (see the Department of Speech).

REQUIREMENTS FOR THE DEGREES

RESIDENCE

Normally, an academic year of residence in the graduate division of Columbian College is required, i.e., completion of a minimum of 30 semester hours of work including the thesis, which is counted as the equivalent of 6 semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than 12 semester hours (which must be approved in advance by the Dean) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. *No part of the minimum requirement may be taken elsewhere.* All work for the degree of Master of Arts, Master of Science, or Master of Fine Arts must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

SCHOLARSHIP

Grades are indicated as *E* (excellent), *S* (satisfactory), *U* (Unsatisfactory), *I* (incomplete).

The grade of *E* must be attained in at least 6 semester hours of the course requirements for the degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the department under which the student is working. A Master's candidate who accumulates 9 hours or more of *U* (including grades of *C* or lower in prerequisite courses) will be automatically suspended.

The symbol *I* (incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" can not be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*.

PROGRAM OF STUDIES

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the appropriate member of the Committee on Studies. The program may be revised, but any change necessitates a repetition of the procedures just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose undergraduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for the Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least 6 semester hours of the course work required for the degree must be taken in courses numbered over 200. Courses numbered between 100 and 200 may be credited toward the degree, if completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers".)

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised to plan his program from the beginning so that work for the lower degree will constitute the initial stage of the doctoral discipline and, upon completion, will admit him to full status in the Graduate Council.

FOREIGN LANGUAGE REQUIREMENT

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one foreign language, selected by the department or committee under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any candidate who chooses to meet the language requirement in French, German, Latin, Russian, or Spanish and has not passed the language examination by the end of 15 attempted semester hours must register for French 49, German 47 or 49, Latin 49 or 50, Russian 47, or Spanish 49 as part of his next registration. The Master's reading examination is given at the first and last class meeting of each of these courses and on the last Saturday of the summer term. No student will be permitted to take the

examination after three unsuccessful attempts. Those enrolled in French 49, German 49, or Spanish 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Spanish, or German should notify the Dean at the time of registration.

Students are reminded of the necessity for early satisfaction of this requirement, normally not later than the end of the first semester of registration for the degree.

ADMISSION TO CANDIDACY

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree, i.e., not later than the completion of 15 semester hours of degree courses. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or committee and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department or committee, he will not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted toward his degree.

THE THESIS

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and filed in the Office of the Dean by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of 3 hours for each of two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire 6 hours during a single semester. The thesis in final form must be presented to the Dean, no later than the date announced in the University calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

THE MASTER'S EXAMINATION

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations are held on dates fixed by the department or committee, but in no case later than January 15

for the fall semester, May 15 for the spring semester, and August 7 for the summer session. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the Committee on Studies, repeat the examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the examination will be permitted.

VETERANS EDUCATION

The Office of Veterans Education, Building Q, 2029 H Street NW., a service unit for veterans and war orphans, acts in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

Public Law 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

Public Law 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

Public Law 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the University Office of Veterans Education at the time of registration.

Public Laws 16 and 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

AIR FORCE RESERVE OFFICERS TRAINING CORPS

The Mission of the Air Force ROTC is to develop in selected college students, through a permanent program of instruction at designated civilian educational institutions, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force.

PURPOSE AND OBJECTIVES OF AIR FORCE ROTC

To select and motivate cadets to serve as career Air Force officers in fields as specifically required by the United States Air Force.

To develop in cadets by precept, example, and participation the attributes of character, personality, and attitudes essential for leadership.

To develop in cadets an interest in, and understanding of, the Air Force mission, organization, operations, problems, and techniques.

To provide that military education and training which will give cadets a general background and sound foundation on which to build an officer career.

To select and motivate cadets for career fields as specifically required by the United States Air Force.

COURSE OF STUDY, ELIGIBILITY REQUIREMENTS, BENEFITS

The program is divided into the basic course covering the first two years and the advanced course covering the junior year, summer training unit, and senior year. For a description of Air Science courses, see pages 156–58.

Enrollment in the basic course is open to all men students who are at least 14 years of age, physically fit, of good character, and candidates for Bachelor's degrees. Women students may enroll in the basic Leadership Laboratory course. Enrollment in Leadership Laboratory satisfies the physical education requirement for both men and women.

Enrollment in the advanced course is on a selective basis from among the best qualified cadets who have successfully completed the basic course. Cadets in the advanced course receive subsistence allowances from the Government totaling approximately $500, which is exempt from income tax. During the period of summer training, cadets receive $75 a month, food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses at no expense to the cadet.

Cadet candidates for pilot training are afforded an opportunity to take 35 hours of flying instruction at government expense. Flying instruction is given at an FAA approved school and is creditable toward a private pilot's certificate.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within the authorized quotas.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;* (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.† All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

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* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

† See Rule (5) for exception

THE READING CLINIC

The Reading Clinic, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $35; for individual instruction, $5 a lesson; for semi-individual instruction, $4 a lesson; for instruction in small groups with common reading difficulties, $3.25 a lesson. All fees are payable in advance at the Office of the Cashier.

THE TESTING AND COUNSELING CENTER

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University, and secondarily to high school students and to adults of the community.

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties, provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University, and for other selected educational institutions, and tests for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community groups, $65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

STUDENT LIFE

RESIDENCE HALLS

The University maintains seven attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1962–63 are as follows:

	Academic Year	
Residence Halls for Men:	*Double*	*Triple*
John Quincy Adams Hall	.....	$345
John C. Calhoun Hall	$380	.....
James C. Welling Hall (Limited space available)	300	.....
Residence Halls for Women:	*Single*	*Double*
William H. Crawford Hall	.....	$405
Hancock Hall	$535	405
Dolly Madison Hall	.....	405
Hattie M. Strong Hall	470	405

Forms for applications, together with detailed information, may be obtained from the Dean of Women, Woodhull House, 2033 G Street NW. or the Dean of Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling and conference.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies, participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home at the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

The University maintains the offices of the Dean of Men and the Dean of Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The deans are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council

The University believes in encouraging the development of a sense of civic responsibility in its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Dean of Men and Dean of Women, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life

The Committee on Student Life has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. This Committee is given authority to approve or disapprove the establishment of any proposed organization on campus.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, Adams Hall Council, Calhoun Hall Council, Crawford Hall Council, Hancock Hall Council, Madison Hall Council, Strong Hall Council, Welling Hall Council, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Rules and Regulations Governing Student Activities."

SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the Department of Physical Education in conducting the women's intramural and informal extra-mural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

Other sports activities are included in the Sailing Association and the Rowing Club.

ARTS

Students may participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debate Society; Folk Singers Club; University Players; University Glee Club; and University Orchestra. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Colonial Program.—The Student Council sponsors a variety of programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and Variety Show, the homecoming football game, and the homecoming dance.

Religion in Life Program.—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters. It is sponsored by the University Chapel.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree, the singing of Handel's Messiah, and the observance of a special Christmas service at the University Chapel.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Phi Beta Kappa.—A national honor society recognizing "outstanding intellectual activity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in the Columbian College and who have shown broad cultural interests, distin-

guished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia.

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Aesculapian Society.—An honorary premedical fraternity.

Alpha Kappa Delta.—A national sociology society.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Arnold Air Society.—A national Air Force ROTC society for advanced cadets.

Delphi.—An intersorority society.

Delta Sigma Rho.—A national forensic society.

Gate and Key.—An intrafraternity society.

Iota Sigma Pi.—A national chemical society for women.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Pershing Rifles.—A national Air Force ROTC society for basic cadets.

Phi Epsilon Phi.—A national botany fraternity.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Phi Sigma Tau.—A national philosophy honor society.

Pi Delta Epsilon.—A national collegiate journalism fraternity.

Pi Epsilon Delta.—A national drama honorary fraternity.

Pi Gamma Mu.—A national social-science society.

Psi Chi.—A national psychology fraternity.

Sigma Alpha Eta.—A national speech and hearing fraternity.

Sigma Pi Sigma.—A national physics fraternity.

Tassels.—A service honorary society for sophomore women.

PROFESSIONAL ORGANIZATIONS AND DEPARTMENTAL CLUBS

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Chemistry Club, El Club Español, Enosinian Debating Society, Le Cercle Français, Lester F. Ward Sociological Society, Phi Delta Gamma (graduate), Phi Sigma Tau (philosophy), Russian Club, Sigma Delta Pi (Spanish).

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Association, Christian Science Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Unitarian Club, United Christian Fellowship, Wesley Foundation.

STUDENT PUBLICATIONS

The Cherry Tree (the annual), *The University Hatchet* (weekly newspaper), *The Potomac* (literary magazine), *The Student Handbook*.

OTHER ORGANIZATIONS

Adams Hall Council, Alpha Theta Nu (scholarship winners), Big Sisters, Calhoun Hall Council, Cheerleaders, Chess Club, Colonial Boosters, Crawford Hall Council, Cultural Foundation, Democratic Club, Foggy Bottom Sports Car Club, Hancock Hall Council, Interfraternity Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Junior Panhellenic Association, Madison Hall Council, Old Men, Pre-legal Society, Republican Club, Rifle Club, Senior Panhellenic Association, Station WRGW, Strong Hall Council, Student Council, University Pep Band, Wandering Greeks, Welling Hall Council.

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the liberal arts and sciences in the summer of 1963 and in the academic year 1963–64. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit.

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor, and when the completion of additional work has been certified by the instructor.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the instructor to qualified seniors; they are not open to other undergraduates.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ANATOMY *

Professors I. R. Telford *(Chairman)*, Paul Calabrisi
Professorial Lecturer T. D. Stewart
Associate Professors F. D. Allan, T. N. Johnson
Assistant Professors J. B. Christensen, J. C. Bartone
Clinical Instructors R. N. Brown, L. E. Church, L. C. Dearden, B. S. Blumberg

Master of Science in the field of Anatomy.—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in Biology, Chemistry, or Zoology. The undergraduate program must include the following courses, or the equivalent: Biology 1–2†, Chemistry 11–12, 21, 151–52; Physics 11, 12; Zoology 103–4 (formerly 41–42). Biochemistry 221–22 is recommended as an elective.

Required: the general requirements, pages 43–46, including Anatomy 203, 204, 205, 221–22, 295–96, 299–300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

201–2 *Gross Anatomy* (8–2) Calabrisi and Staff
For qualified nonmedical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $30; Anatomy 202—laboratory fee, $7. (Academic year—as arranged.)

203 *Human Embryology* (2) Allan and Staff
For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8. (Spring—as arranged.)

204 *Neuroanatomy* (3) Johnson and Staff
For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13. (Fall—as arranged.)

205 *Microscopic Anatomy* (4) Telford and Staff
For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13. (Fall—as arranged.)

221–22 *Seminar* (1–1) Telford and Staff
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)

249–50 *Introduction to Medical Research*‡ (3–3) The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

295–96 *Research* (arr.) The Staff
Fee to be arranged. (Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

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* The Staff of Instruction is for the academic year 1962–63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.
‡ This is an interdepartmental course. The student should register in the department directing his research.

*ART**

Professors D. C. Kline *(Chairman)*, W. A. MacDonald
Professorial Lecturer Grace Evans
Associate Professor L. P. Leite†
Associate Professorial Lecturer E. E. Harrison
Assistant Professor George Steiner
Studio Lecturers on the Staff of the Corcoran School of Art Edmund Archer, Richard Lahey, Jessalee Sickman, Heinz Warneke, Jack Perlmutter, Alexander Russo, Eleanor Bookout, Joseph Carter, Richard Lafean, John Ruddley, Joseph Taney, Peter Thomas
Studio Lecturers in Applied Music R. H. Harmon, John Martin, Joseph Ott, Norman Scribner, John Stephens, Margaret Tolson, Richard Townsend, Jule Zabawa

Bachelor of Arts with a major in (1) *Art History and Theory*, (2) *Drawing and Painting*, (3) *Sculpture*, (4) *Commercial Art*, or (5) *Ceramics (Departmental)*:

The major in Art History and Theory.—Prerequisite: the Arts and Letters curriculum, page 31, or the equivalent, including Art 31–32 and 71–72.

Required: in addition to the general requirements, pages 38–41, eighteen semester hours, as follows: Art 101 or 102, 103, 104 or 105, 110, 112, 113 or 114; and twelve semester hours selected from second-group courses, or from third-group courses open to undergraduates with the approval of the instructor. Students intending to major in this field are urged to acquire a reading knowledge of a foreign language, preferably French or German, at the earliest possible convenience.

The major in Drawing and Painting, *Sculpture*, or *Commercial Art.*—Prerequisite: the Arts and Letters curriculum, page 31, or the equivalent, including Art 21–22, 41–42, and 31–32 or 71–72.

Required: in addition to the general requirements, pages 38–41, twenty-four semester hours of studio practice; six semester hours of art history selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor.

The major in Ceramics.—Prerequisite: the Arts and Letters curriculum, page 31, or the equivalent, including Art 21–22, Art 31–32 or Art 71–72, and Art 51–52.

Required: in addition to the general requirements, pages 38–41, twenty-four semester hours of studio practice; six hours of art history selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor.

Classes in the practice of art are held at the Corcoran School of Art.

Bachelor of Arts with a major in (1) *Music History and Literature*, (2) *Music Theory*, or (3) *Applied Music (Departmental).*—Prerequisite: the Arts and Letters curriculum, page 31, or the equivalent, including Music 5–6.

Required: in addition to the general requirements, pages 38–41, Music 103–4 and 131–32; a minimum of four semesters in Music Ensemble groups (or evidence of equivalent experience); and twenty-four semester hours of second-group courses as follows:

1. *For the major in Music History and Literature.*—Fifteen semester hours of Music History and Literature courses, six hours of Applied Music, and Music 135 or 137.

2. *For the major in Music Theory.*—Twelve semester hours of Music Theory courses, six hours of Music History and Literature courses, and six hours of piano (other instrument or voice if departmental requirements for proficiency in piano are met).

3. *For the major in Applied Music.*—Twelve semester hours of Applied Music in field of specialization and participation in senior recital, six hours of Music Theory courses, and six hours of Music History and Literature courses.

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave fall semester 1962–63.

Master of Arts in the field of Art History and Criticism with concentrations in Classical Art and Archeology, Art of the Americas, Renaissance and Baroque Art, and Contemporary Art.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or the equivalent.

Required: the general requirements, pages 43–46. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A general written examination on the problems in the field of Art History and Criticism; a written thesis embodying the results of research on some specific topic in the history and criticism of art.

Master of Fine Arts in the field of Painting or *of Sculpture.*—Prerequisite: the degree of Bachelor of Arts with a major in Drawing and Painting, Sculpture, or Commercial Art at this University, or the equivalent.

Required: the general requirements, pages 43–46. As much as possible of the twenty-four semester hours in course work should be in third-group courses. A creative thesis in painting or sculpture; a paper discussing some technical phase of the problem illustrated by the thesis.

Bachelor of Arts in Education with a teaching field in Art (School of Education).—Prerequisite: the Education curriculum, pages 33–34.

Required: the Art option and professional courses listed in the School of Education Catalogue.

ART HISTORY AND THEORY

FIRST GROUP

1 *Art Appreciation* (3) MacDonald

The language and function of art in its various media; the historical development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day; summer 1963.)

31–32 *Survey of Western Art* (3–3) Leite

A survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—evening.)

71–72 *Introduction to the Arts in America* (3–3) Kline

Painting, sculpture, and architecture of America, with selected references to the crafts and popular arts. *First half:* from Colonial beginnings to the Republican Age. *Second half:* from early 19th century to the present. (Academic year—day; summer 1963.)

101 *Greek and Roman Architecture* (3) MacDonald

(Fall—evening.)

102 *Greek and Roman Sculpture* (3) MacDonald

(Spring—evening.)

103 *Medieval Art* (3) Evans

Architecture, sculpture, and painting from the formative states of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. (Spring—evening; summer 1963.)

104 *Renaissance Art in Italy I* (3) Leite

The early developments from the 13th to the 15th century. (Fall—day.)

105 *Renaissance Art in Italy II* (3) Leite

The High Renaissance and Mannerism. (Spring—day.)

106 *Renaissance Art in the North* (3) Leite

The painting in the Netherlands, Germany, France, Spain, and Portugal. (Fall—day.)

107 *Eighteenth Century Art in Europe* (3) Evans

The development of painting, sculpture, and architecture in 18th century Europe. (Not offered 1963–64.)

Leite

109 *Nineteenth Century Art in Europe* (3)
Painting and sculpture from Academism to Symbolism. (Fall—day.)

Leite

110 *Contemporary Art* (3)
Painting and sculpture in 20th century Europe. (Spring—day.)

MacDonald

111 *Classical Archeology* (3)
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day.)

MacDonald

112 *Art of Egypt and the Ancient Orient* (3)
A study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Spring—day.)

Evans

113 *Baroque Art in Italy* (3)
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy. (Fall—day.)

Evans

114 *Baroque Art in the North* (3)
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Spring—day.)

Leite

115 *Christian Iconography* (3)
The origins and development of Christian symbols and themes from Early Christian to modern times. (Not offered 1963–64.)

MacDonald

116 *Classical Iconography* (3)
The origin and development of myths in classical art. (Not offered 1963–64.)

Kline

120 *Art of China and Japan* (3)
The architecture, painting, and sculpture of China, Korea, and Japan. (Spring—day.)

Kline

141 *Interior Decoration* (3)
The principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. (Not offered 1963–64.)

Kline

142 *House Planning* (3)
The contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1963–64.)

Kline

143 *Folk Arts in America* (3)
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected references to American folk music. (Summer 1963.)

THIRD GROUP

Kline

203 *Primitive Art** (3)
The arts of prehistoric and primitive man in Europe in the pre-Columbian Americas, Oceania, and Africa. (Fall—day.)

Kline

207 *Modern Architecture* (3)
The development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Not offered 1963–64.)

Kline

243 *Seminar in American Art* (3)
(Fall—day.)

Leite

244 *Seminar in Naturalism and Realism* (3)
A reading knowledge of French is desirable. (Not offered 1963–64.)

Leite

245 *Seminar in Romanticism* (3)
A reading knowledge of French and German is desirable. (Not offered 1963–64.)

MacDonald

246 *Seminar in Classical Art* (3)
(Fall—day.)

* May be taken for undergraduate credit with the approval of the instructor.

247 *Seminar in Symbolism* (3) — Leite
(Not offered 1963–64.)

248 *Studies in Classical Art* (3) — MacDonald
(Summer 1963.)

261–62 *Theory and Criticism* (3–3) — MacDonald
The history of theory and criticism in Classical, Medieval, Renaissance, and Modern times. (*First half:* fall—day. *Second half:* not offered 1963–64.)

289–90 *Thesis* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

DRAWING AND PAINTING, SCULPTURE, COMMERCIAL ART, AND CERAMICS

FIRST GROUP

21–22 *Basic Design and Composition** (3–3) — Ruddley
The fundamentals of two- and three-dimensional design. (Academic year—day and evening; summer 1963—Art 21 (3).)

35–36 *Commercial Art I* (3–3) — Taney
Fundamentals of advertising and editorial layout. (Academic year—day and evening.)

41–42 *Drawing and Perspective* (3–3) — Russo
An introductory course in object and figure drawing and mechanical perspective. (Academic year—day and evening; summer 1963—Art 41 (3).)

51–52 *Ceramics I* (3–3) — Lafean and Staff
Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Material fee, $25 a semester. (Academic year—day and evening; summer 1963—Art 51 (3), Art 52 (3).)

65–66 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) — The Staff
Primarily for nonmajors. (Academic year—day; summer 1963—Art 65 (3).)

81–82 *Sculpture I* (3–3) — Warneke, Turano
Material fee, $6 a semester. (Academic year—day and evening.)

125–26 *Drawing and Painting II—Life, Still Life, and Portrait* (6–6) — The Staff
(Academic year—day.)

127–28 *Drawing and Painting II—Life and Portrait* (6–6) — The Staff
(Academic year—day and evening; summer 1963—Art 127 (3)†.)

131–32 *Ceramics II* (6–6) — Lafean
Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming, mosaic. Practical experience in display. Individual projects in a choice of techniques, and experimentation in the possibilities and limitations of the medium. Oxidation firing, ceramic design, current directions of the studio potter, research in studio procedures and equipments. Material fee, $30 a semester. (Academic year—day and evening; summer 1963—Art 131 (3)†, Art 132 (3)†.)

151–52 *Ceramics III* (6–6) — Lafean
Advanced glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Studio teaching techniques and marketing procedures. Material fee, $30 a semester. (Academic year—day and evening.)

* Art 21-22 is prerequisite to all other studio courses.
† May be taken for 6 semester hours with the approval of the instructor.

157–58 *Graphics* (6–6) — Perlmutter
Relief printing and wood block, with special reference to western and eastern techniques. (Academic year—day.)

159–60 *Anatomy and Techniques* (6–6) — Russo
Special problems in anatomy and drawing and painting of the life model in action. (Academic year—day.)

175–76 *Advanced Design and Composition* (6–6) — Ruddley
Advanced problems in creative design and composition. (Academic year—day and evening; summer 1963—Art 175 (3)*.)

179–80 *Sculpture II* (6–6) — Warneke, Turano
Portrait-life modeling and composition in clay; plaster and wood carving. Material fee, $6 a semester. (Academic year—day and evening.)

183–84 *Commercial Art II* (6–6) — Taney and Staff
Problems in the production of advertisements, posters, magazines, pamphlets, displays, exhibits, photography, and materials for television. (Academic year—day and evening.)

185–86 *Commercial Art III* (6–6) — Taney and Staff
Advanced problems and techniques in supervision and production of various commercial projects. (Academic year—day and evening.)

189–90 *Sculpture III* (6–6) — Warneke
Advanced problems in modeling and direct carving. Prerequisite: 18 semester hours of sculpture. Material fee, $6 a semester. (Academic year—day and evening.)

THIRD GROUP

265–66 *Painting IV* (6–6) — The Staff
(Academic year—day and evening; summer 1963—Art 265 (3)*.)

275 *Painting V* (6) — The Staff
(Fall and spring—as arranged; summer 1963—Art 275 (3)*.)

279–80 *Sculpture IV* (6–6) — Warneke, Turano
(Academic year—as arranged.)

281 *Sculpture V* (6) — Warneke
Material fee, $6. (Fall and spring—as arranged.)

299–300 *Thesis* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

MUSIC HISTORY AND LITERATURE AND MUSIC THEORY

FIRST GROUP

3–4 *Music Appreciation* (3–3) — Steiner, Harrison
An introduction to the historical sequences of musical style, the elements of music, musical forms, the works of the chief composers, and the media of musical presentation. (Academic year—day and evening; summer 1963—Music 4 (3).)

5–6 *Fundamentals of Music* (3–3) — Harrison
Fundamental principles and practical use of the elements of music, including scales, keys, intervals, triads, chords, cadences, notation, terms, melodic and harmonic dictation and basic harmonic and contrapuntal practice. (Academic year—day.)

* May be taken for 6 semester hours with the approval of the instructor.

SECOND GROUP

103–4 *History of Music* (3–3) — Steiner
The development of music in the Western World from the early Christian Era to the present. (Academic year—day; summer 1963—Music 104 (3).)

106 *Music of the Classic Period* (3) — Harrison
Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Fall—day.)

107 *Music of the Romantic Period* (3) — Harrison
Study of the styles, backgrounds, and literature from Schubert through the 19th century developments of nationalism, descriptivism, and neo-classicism. (Spring—day.)

109 *Orchestra Literature* (3) — Steiner
Survey of the history and styles of orchestra literature; analysis of representative works (Fall—day.)

110 *Chamber Music Literature* (3) — Steiner
Survey of the history and styles of chamber music literature; analysis of representative works. (Spring—day.)

121 *The Opera* (3) — Harrison
Survey of the history and styles of opera; analysis of representative works. (Fall—day.)

131–32 *Harmony* (3–3) — The Staff
Practice in harmonic writing, figured and unfigured bass, secondary and altered chords, nonharmonic tones and extended modulations. Prerequisite: Music 5–6 or the equivalent. (Academic year—evening.)

135 *Counterpoint* (3) — The Staff
Strict counterpoint up to four parts. Techniques of small contrapuntal forms. (Spring—evening.)

137 *Orchestration* (3) — The Staff
Instrumental orchestral scoring. (Fall—evening.)

138 *Form and Analysis* (3) — Harrison
Analysis of musical forms in representative musical literature. (Spring—day.)

APPLIED MUSIC

FIRST GROUP

All first-group courses in Applied Music may be repeated for credit.

11 *Piano* (1 or 2) — Tolson, Ott
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 11 (1).)

13 *Voice* (1 or 2) — Zabawa
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 13 (1).)

15 *Organ* (1 or 2) — Scribner
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 15 (1).)

17 *Orchestral Instruments* (1 or 2) — The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 17 (1).)

51 *Orchestra* (1) Steiner
Preparation and performance of orchestral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

53 *Chorus* (1) Harmon
Preparation and performance of choral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

SECOND GROUP

Before admission to second-group courses in Applied Music the student must demonstrate, in audition, that he meets departmental requirements.

All of the following courses may be repeated for credit: *only music majors*, however, may earn 3 hours of credit in one semester for any of these courses. The studio fee is waived for full-time major students.

111 *Piano* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

113 *Voice* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

115 *Organ* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

117 *Orchestral Instrument* (1or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

*BIOCHEMISTRY**

Professors J. H. Roe *(Emeritus)*, C. R. Treadwell *(Chairman)*
Professorial Lecturers W. R. Carroll, Irving Gray, Arthur Weissbach, Leon Swell, Sidney Udenfriend, C. A. Kuether
Associate Professors B. W. Smith, G. V. Vahouny, J. M. Bailey

Master of Arts or *Master of Science in the field of Biochemistry.*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Biology 1–2†; Chemistry 11–12, 21, 22, 151–52; Physics 11 and 12.

Required: the general requirements, pages 43–44, including Biochemistry 221–22, 227–28, 249–50, 299–300. The remaining courses are to be selected from Biochemistry 224, 232, 241, 251, 261, 295–96, or, with the approval of the adviser, from graduate courses in Microbiology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

221–22 *General Biochemistry* (4–4) Vahouny
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, $15 a semester. (Academic year—TTh 8–12 am.)

* The Staff of Instruction is for the academic year 1962-63.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

224 *Biochemistry of the Enzymes* (1) Weissbach
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. (1964–65 and alternate years: spring—M 5 pm.)

225–26 *Biochemical Procedures* (3–3) Smith and Staff
A laboratory course. Material fee, $16 a semester. (Academic year—as arranged.)

227–28 *Biochemistry Seminar* (1–1) The Staff
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (*First half:* F 5 pm. *Second half:* F 4 pm.)

232 *Proteins and Amino Acids* (1) Carroll
A lecture course. Prerequisite: Biochemistry 113 or 221. (Spring—W 5 pm).

241 *Isotopes* (2) Gray
Theoretical characterization of isotopes and their applications in biology. Attention will be given to counting, health physics and radiation safety, autoradiography and chromotography. (Spring—S 8 am.)

249–50 *Introduction to Medical Research** (3–3) Bailey
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

251 *Carbohydrate Metabolism* (1) Weissbach
A lecture course. Prerequisite: Biochemistry 114 or 222. (1963–64 and alternate years: spring—M 5 pm.)

261 *Biochemistry of the Lipids* (1) Swell, Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. (Spring—S 12 noon.)

295–96 *Research in Biochemistry* (arr.) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

BOTANY†

Professor R. B. Stevens *(Chairman)*
Professorial Lecturer L. B. Smith
Associate Professors J. M. Kaper *(Research)*, Caroline Adams
Associate Professorial Lecturers Kittie Parker, R. S. Sigafoos, Edward Hacskaylo, H. M. Cathey, R. N. Stewart, R. L. Weintraub
Lecturer W. A. Shropshire, Jr.

Bachelor of Arts or *Bachelor of Science with a major in Botany (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Biology 1–2‡, or the equivalent.

* This is an interdepartmental course. The student should register in the department directing his research.
† The Staff of Instruction is for the academic year 1962–63.
‡ An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

Required: in addition to the general requirements, pages 38–41, a minimum of twenty-four semester hours of second-group courses in Botany or in a combination of Botany and related sciences as approved by the Chairman.

Bachelor of Arts or *Bachelor of Science with a major in Biology (Departmental).*—This interdepartmental major may be arranged in conjunction with the Department of Zoology. Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Biology 1–2, or the equivalent.

Required: in addition to the general requirements, pages 38–41, a minimum of twenty-four semester hours of second-group courses which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Master of Arts or *Master of Science in the field of Botany.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany or Biology.

Required: the general requirements, pages 43–46.

Master of Arts or *Master of Science in the field of Biology.*—This interdepartmental field may be arranged in conjunction with the Department of Zoology. Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany, Zoology, or Biology.

Required: the general requirements, pages 43–46, which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Doctor of Philosophy (in a field of Botany or Biology).—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in Biology.—Prerequisite: the Education curriculum, pages 33–34.

Required: the Biology option and the professional courses listed in the School of Education Catalogue.

BIOLOGY*

FIRST GROUP

The Staff

1–2 *Introductory Biology (4–4)**

An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences (4):* fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences (4):* fall and spring—day and evening; summer 1963.)

BOTANY

SECOND GROUP*

Parker

105 *Field Botany* (3)

Lecture (1 hour), laboratory and field (4 hours). A course, primarily for nonspecialists, emphasizing local flora. (1963 and alternate summers.)

Shropshire

106 *Plant Growth* (3)

Lecture (2 hours), laboratory (2 hours). A course, primarily for nonspecialists, emphasizing practical problems of growing and caring for plants. Material fee, $8. (1964 and alternate summers.)

* Biology 1–2 is prerequisite to all second-group courses in Botany, except by permission of the instructor.

108 *Organic Evolution** (3) — Munson
Theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: spring—day; 1964–65: spring—evening.)

109–10 *Plant Morphology* (3–3) — Adams
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—day.)

115–16 *Cytology** (3–3) — Desmond
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

125–26 *Plant Taxonomy* (3–3) — Parker
Lecture (1 hour), laboratory and field (4 hours). (1963–64 and alternate years: academic year—evening.)

127 *Genetics** (3) — Stewart
A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

131–32 *Mycology* (3–3) — Stevens, Hacskaylo
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1964–65 and alternate years.)

133–34 *Plant Pathology* (3–3) — Stevens
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—evening.)

135–36 *Plant Physiology* (3–3) — Cathey
Lecture (2 hours), laboratory (2 hours). Prerequisite: Chemistry 11–12 or permission of the instructor. Material fee, $8 a semester. (1964–65 and alternate years.)

140 *Cell Physiology** (3) — Shropshire
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

141–42 *Plant Ecology* (3–3) — Sigafoos
Lecture (1 hour), laboratory and field (4 hours). (1964–65 and alternate years.)

THIRD GROUP

201–2 *Seminar: Cytology** (3–3) — Desmond
A study in the current literature in experimental cytology. (Not offered 1963–64.)

221 *Seminar: Taxonomy* (3) — Smith
(1964–65 and alternate years.)

232 *Seminar: Mycology and Plant Pathology* (3) — Stevens
(1963–64 and alternate years: spring—as arranged.)

235 *Seminar: Plant Physiology* (3) — Cathey, Hacskaylo
(1963–64 and alternate years: fall—as arranged.)

242 *Seminar: Plant Ecology* (3) — Sigafoos
(1964–65 and alternate years.)

252 *Seminar: Plant Virology* (2) — Kaper
(Spring—as arranged.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department

295–96 *Research* (arr.) The Staff
Fee to be arranged. (Academic year—as arranged; summer 1963—Botany 295 (arr.).)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

*CHEMISTRY**

Professors B. D. Van Evera, S. N. Wrenn, C. R. Naeser *(Chairman)*, R. C. Vincent, W. F. Sager, R. E. Wood, T. P. Perros, W. E. Schmidt, D. G. White
Associate Professor J. W. Harkness
Assistant Professors R. C. Sentz, Margaret Ethier, D. M. Eargle

Registration.—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

Bachelor of Arts or *Bachelor of Science with a major in Chemistry (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Chemistry 11–12, 21, and 22, Mathematics 22 and 23 (or former 29 and 30), Physics 11, 12, 13, 16; or 11, 14, 15, and 16.

Required: the general requirements, pages 38–41, including Chemistry 111–12, 113–14, 122, 134 (or 235–36), 151–52, 135 or 155 (two semester hours), and 193 and a grade of "pass" on the chemistry major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) analytical chemistry, (2) inorganic chemistry, (3) organic chemistry, (4) physical chemistry. The work of the junior and senior years must be approved by the Department. Chemistry 153 and the German language are required of all majors who wish to be certified to the American Chemical Society. Others may omit Chemistry 153 and may elect French or Russian. Two foreign languages are recommended for students planning to do graduate work.

Master of Arts or *Master of Science in the field of Chemistry.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements, pages 43–46. All prospective Master's candidates must take qualifying examinations in the fields of analytical, inorganic, organic, and physical chemistry. These examinations will be given during the first week of classes each semester, and are a part of the prerequsites for all advanced courses. At least two of these examinations must be taken at the beginning of the first year of registration and the remaining one(s) must be taken at the beginning of the second year. Deficiencies, if any, shall be eliminated by assignment to appropriate courses in the 100 group for which a limited amount of graduate credit may, upon petition, be assigned for courses normally taken by seniors. The thirty hours of required work must include Chemistry 213 and at least one three semester hour course in the 200 group in two of the three fields of analytical, inorganic, and organic chemistry. In addition, the thirty hours must include at least four semester hours of laboratory work, Chemistry 193 and 299–300. Chemistry 156 is prerequisite to thesis work in the field of organic chemistry. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in Chemistry.—Prerequisite: the Education curriculum, pages 33–34.

Required: the Chemistry option and the professional courses listed in the School of Education Catalogue.

* The Staff of Instruction is for the academic year 1962–63.

FIRST GROUP

3–4 *Fundamentals of Physical Sciences* (4–4) Schmidt, Ethier

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester. (Academic year—day.)

11–12 *General Chemistry* (4–4) The Staff

A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

13–14 *General Chemistry* (4–4) White

A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 11 and Mathematics 21 or 29. Laboratory fee, $18 a semester. (Academic year—day and evening.)

15 *General Chemistry (Accelerated)* (4) The Staff

Lecture (3 hours), laboratory (3 hours), recitation (1 hour). An intensive one semester course in general chemistry. Prerequisite: high school chemistry accompanied by laboratory work and a satisfactory grade on either the College Entrance Examination Board Achievement Test in Chemistry or on the placement examination given by the Department of Chemistry prior to registration, and high school physics. Laboratory fee, $13. (Fall—day.)

21 *Qualitative Inorganic Analysis* (4) Vincent

Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12 or 15, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, $18. (Fall and spring—day and evening; summer 1963.)

22 *Quantitative Inorganic Analysis I* (4) Schmidt

Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18. (Spring—day and evening; summer 1963.)

SECOND GROUP

111–12 *Physical Chemistry Lectures* (3–3) Wood

A year course: credit is not given for the first half until the second half is completed. Introduction to physical chemistry. Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have adequate credit for physical chemistry laboratory. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 22 or former 30, Physics 13 or 15, or (2) Chemistry 21, Mathematics 22 or former 30, Physics 14. (Academic year—day and evening.)

113–14 *Physical Chemistry Laboratory* (2–2) Wood

A year course: credit is not given for the first half until the second half is completed. Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester. (Academic year—day (also Saturday).)

122 *Quantitative Inorganic Analysis II* (4) Schmidt

Lecture (2 hours), laboratory (6 hours). Continuation of Chemistry 22 including theory and practice of separations, organic reagents, electrochemistry, and colorimetry in analysis. Prerequisite: Chemistry 22. Laboratory fee, $18. (Fall—day and evening.)

134 *Descriptive Inorganic Chemistry* (2) White
An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151. (Spring—day.)

135–36 *Inorganic Chemistry: Preparations* (2–2) Perros
Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152 and 134. Laboratory fee, $18 a semester. (*First half:* Fall—day, spring—evening. *Second half:* spring—evening.)

151–52 *Organic Chemistry* (4–4) Wrenn, Sager
A year course: credit is not given for the first half until the second half is completed. Chemistry of the compounds of carbon. Prerequisite*: Chemistry 21. Laboratory fee: Chemistry 151, $12; Chemistry 152, $20. (*First half:* fall—lecture (3 hours), laboratory (3 hours), day and evening; summer 1963. *Second half:* spring—lecture (2 hours), laboratory (6 hours), day and evening; summer 1963.)

153 *Special Laboratory in Organic Chemistry* (1) Wrenn, Sager
A course designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 151–52. Prerequisite or concurrent registration: Chemistry 22 and 152. Laboratory fee, $12. (Spring—day and evening.)

155 *Organic Chemistry: Preparations* (2 or 3) Wrenn
Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour. (Spring—evening.)

156 *Qualitative Organic Analysis* (3) Sentz
Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, $18. (Fall—evening.)

191 *History of Chemistry* (2) Perros
Historical development of chemistry. Prerequisite: Chemistry 22 and 152. (1963–64 and alternate years: fall—evening.)

193 *Chemical Literature* (1) Wrenn
A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Fall—evening.)

THIRD GROUP†

203 *Chemical Kinetics* (2) Wood
The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. (1963–64 and alternate years: spring—evening.)

211–12 *Physical Chemistry* (2–1) Wood
Same course as 111–12. Chemistry 211–12 may be taken for credit only by special permission. Credit will be assigned only upon the satisfactory completion of Chemistry 213. (Academic year—day and evening.)

213 *Chemical Thermodynamics* (3) Wood
Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: grade of *A* or *B* in Chemistry 111–12, *Satisfactory* in 211–12, or qualifying grade in physical chemistry qualifying examination. (Fall—evening.)

* This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 or 15 within the past two years or by a placement examination.
† The appropriate qualifying examination is prerequisite to all advanced courses.

216 *Statistical Mechanics as Applied to Chemistry* (3) Sager
An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

217 *Chemical Bonding* (2) Sager
A survey of modern developments in the theory of valence with emphasis on application to problems of stability and structure of complex molecules. Prerequisite: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

221–22 *Advanced Analytical Chemistry* (2 or 3–2 or 3) Schmidt
Lecture (2 hours), laboratory (3 hours—optional). Theory and application of recent methods of analysis including electrical and optical instrumentation. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a semester without laboratory work, either half may be taken first. Laboratory fee, $11 a semester. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

231–32 *Special Topics in Inorganic Chemistry* (2–2) White, Perros
A series of one-semester courses covering such topics as (1) chemistry of the less familiar elements, (2) organometallic, organosilicon, and carbonyl compounds, and (3) co-ordination chemistry. Prerequisite: Chemistry 235. (Academic year—evening.)

234 *Radiochemistry* (2)
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235–36. (1964–65 and alternate years.)

235–36 *Inorganic Chemistry* (3–2) Naeser
Application of modern chemical theories to inorganic substances and reactions, followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Academic year—evening.)

251–52 *Advanced Organic Chemistry* (3–3) Sager
Synthesis, reactions, and properties of carbon compounds, fundamental theories of organic chemistry. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12, 113–14. (Academic year—evening.)

253 *Advanced Synthetic Organic Chemistry* (3) Wrenn
Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening.)

257 *Theoretical Organic Chemistry* (3) Sager
Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252. (1963–64 and alternate years: fall—evening.)

291–92 *Seminar: Recent Developments in Chemistry* (1–1) The Staff
(Academic year—day.)

295–96 *Research* (arr.) The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
Laboratory fee, $18 a semester. (Academic year—as arranged; summer 1963.)

*CLASSICAL LANGUAGES AND LITERATURES**

Professor J. F. Latimer *(Chairman)*
Lecturer A. B. Seidman
Associates R. G. Crawford, D. B. Beers

Bachelor of Arts with a major in Latin (Departmetal).—Prerequisite: the Arts and Letters curriculum, page 31, including Latin 51–52 and History 39–40.

Required: in addition to the general requirements, pages 38–41, eighteen semester hours in Latin beyond first-group courses, Art 111, Philosophy 111. A reading knowledge of French or German, preferably both, is strongly recommended.

Latin 1–2 and 3–4, or Greek 11–12 and 13–14 satisfies the foreign language requirement, see pages 30–31.

LATIN AND GREEK

FIRST GROUP

Crawford

1–2 *First-year Latin* (3–3)
A year course: credit is not given for the first half until the second half is completed. Functional presentation of the essentials of the language, with appropriate reading selections; development of English derivatives; introduction to Roman life and literature. (1963–64 and alternate years: academic year—evening.)

Beers

3–4 *Second-year Latin* (3–3)
A year course: credit is not given for the first half until the second half is completed. A continuation of the first-year course, but with increased emphasis on Latin readings which illustrate Roman life and literature; continuation of vocabulary building in English. Prerequisite: Latin 1–2 or two years of high school Latin. (1963–64 and alternate years: academic year—day.)

The Staff

11–12 *First-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Essentials of grammar with appropriate reading selections. (Offered 1964–65.)

Latimer

13–14 *Second-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Review of grammar; rapid reading from selected Greek authors. (Academic year—evening.)

The Staff

49–50 *Latin Grammar and Readings* (3–3)
Primarily for graduate students preparing for reading examinations. Undergraduates admitted by permission of the instructor. No academic credit for graduate students. *First half:* essentials of Latin grammar with appropriate reading selections. *Second half:* continuation of grammar with selections from various Latin authors for rapid reading. (Academic year—as arranged.)

The Staff

51–52 *Introduction to Latin Prose and Poetry* (3–3)
Selections from Cicero and Caesar, Virgil and Ovid. Prerequisite: Latin 3–4 or three years of high school Latin. (Not offered 1963–64.)

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* The Staff of Instruction is for the academic year 1962–63.

SECOND GROUP

101–2 *Roman Comedy* (3–3) The Staff
Selected plays from Plautus and Terence. Prerequisite: Latin 51–52 or permission of the Instructor. (Academic year—evening.)

111–12 *Roman History and Philosophy* (3–3) The Staff
Selections from Cicero, Sallust, Lucretius, and Livy. Prerequisite: Latin 51–52 or permission of the Instructor. (Not offered 1963–64.)

121–22 *Roman Lyric Poetry and Satire* (3–3) The Staff
Selections from Catullus, Horace, Juvenal, and Martial. Prerequisite: Latin 101–2 or permission of the Instructor. (Not offered 1963–64.)

COURSES IN ENGLISH TRANSLATION

FIRST GROUP

71–72 *Greek and Roman Backgrounds in Literature* (3–3) Latimer
Selected Greek and Roman masterpieces and their literary influence. This course satisfies the literature requirement, see page 31. (*First half:* spring—day. *Second half:* fall—day.)

SECOND GROUP

109–10 *Greek and Roman Drama* (3–3) The Staff
Selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca; selected comedies of Aristophanes and Menander, Plautus and Terence; historical development of classical drama. (Not offered 1963–64.)

CLASSICAL HEBREW

FIRST GROUP

21–22 *First-year Classical Hebrew* (3–3) Seidman
A year course: credit is not given for the first half until the second half is completed. Fundamental principles of the language with practice in reading simple narrative prose. (Not offered 1963–64.)

23–24 *Second-year Classical Hebrew* (3–3) Seidman
A year course: credit is not given for the first half until the second half is completed. Review of grammar and exegesis of selected passages from the Hebrew text of the Old Testament. (Academic year—day.)

ECONOMICS *

Professors A. E. Burns, D. S. Watson, T. W. Holland, J. W. Kendrick†, W. E. Schmidt, Sar Levitan *(Research)*
Professorial Lecturers S. H. Axilrod, Margaret deVries
Associate Professors J. W. Skinner *(Chairman)*, Henry Solomon *(Research)*
Associate Professorial Lecturers R. L. Sammons, D. J. Edwards, R. E. Moor
Assistant Professors Ching-Yao Hsieh, S. J. Hunter
Lecturers M. E. Fieser, Paul Gekker, S. E. Haber

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave fall semester 1962–63

Bachelor of Arts with a major in Economics (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Economics 1–2 and Statistics 51.

Required: the general requirements, pages 38–41, and (1) Economics 101–2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of Economics 101–2 and 121; (3) Statistics 111, 112; (4) nine semester hours of other second-group courses selected with the approval of the adviser.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—See the Department of History.

Master of Arts in the field of Economics.—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements, pages 43–46, including Economics 210, at least nine semester hours in economic theory, and a thesis (Economics 299–300).

Doctor of Philosophy.—See the Graduate Council Catalogue.

Master of Arts in Government with a major in Economic Policy.—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent. See the School of Government, Business, and International Affairs Catalogue.

FIRST GROUP

Skinner and Staff

1–2 *Principles of Economics** (3–3)
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—evening; spring—day and evening; summer 1963.)

SECOND GROUP

The Staff

101–2 *Economic Analysis* (3–3)
Analysis of demand, supply, and pricing; theory of national income determination. (*First half:* fall—day and evening; spring—evening; summer 1963. *Second half:* fall—day; spring—day and evening.)

Burns

104 *History of Economic Thought* (3)
History of the major schools of economic thought; influence of changing problems on the development of economic theory. (Spring—day.)

Kendrick

105 *Business Cycles* (3)
Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (Fall—evening.)

Hunter

121 *Money and Banking* (3)
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (Fall—day and evening; spring—evening; summer 1963.)

Hunter

123 *Monetary Theory and Policy* (3)
Principal contemporary theories, background of recent monetary policy. (Spring—day.)

133 *The Economy of the Soviet Union* (3)
Development and main features of the economic life of the Soviet Union (See History 145–46 and Geography 196). (Not offered 1963–64.)

Holland

141 *Unionism and Collective Bargaining* (3)
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (Fall—day.)

* Economics 1–2 is prerequisite to all other courses in Economics.

142 *Labor Economics* (3) Holland
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Spring—day.)

161–62 *Public Finance and Taxation* (3–3)
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (Academic year—evening.)

165 *Government Control of Economic Activity* (3) Watson
Changing role of government in promoting and regulating economic activity, types and spheres of control. (Fall—day.)

181–82 *International Economics* (3–3) Schmidt
First half: survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening; summer 1963—Economics 181 (3).)

185–86 *Economic History and Problems of Latin America* (3–3) Sammons
Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

198 *Proseminar in Economics* (3) Skinner
Comprehensive survey of economics. Prerequisite: Economics 101–2 and 121. (Fall and spring—as arranged.)

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns
Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

203–4 *Contemporary Price Theory* (3–3) Watson
The theory of relative prices from Marshall to the present. (Academic year—evening.)

205 *Theory of Employment and Income* (3) Kendrick
Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)

206 *Business Cycle Analysis* (3) Kendrick
Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)

208 *The National Income* (3) Kendrick
The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)

210 *Seminar in Economics* (3) Skinner
Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)

212 *Seminar in Price Theory* (3) Watson
Advanced topics in the theory of relative prices. Prerequisite: Economics 203–4 or the equivalent. (Not offered 1963–64.)

213 *Economic Thought in the Twentieth Century* (3) Burns
Continuation of Economics 201–2. The principal trends in economic thought during the present century. (Not offered 1963–64.)

215–16 *Mathematical Economics* (3–3) Solomon
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)

217–18 *Survey of Economics* (3–3) Watson
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)

219 *Managerial Economics* (3) Watson (Summer
Analysis of price, production, and inventory policies of business firms. 1963.)

221–22 *Monetary Theory* (3–3) Hunter
Contemporary monetary theories. (Academic year—evening.)

223–24 *Monetary Policy and Central Banking* (3–3) Axilrod
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)

231–32 *Quantitative Economics* (3–3) Solomon
Selected topics in quantitative economics. (Not offered 1963–64.)

241 *Unionism, Collective Bargaining, and Labor Economics* (3) Holland
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)

244 *Problems in Unionism, Collective Bargaining, and Labor Economics* (3) Holland
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)

246 *Foreign Labor Movements* (3) Holland
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)

247 *Labor Relations in the Federal Service* (3) Holland
Admission by permission of the instructor. (Fall and spring—evening.)

251–52 *Economic Development* (3–3) Schmidt
The theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening; summer 1963—Economics 251 (3).)

253 *Productivity Analysis* (3) Kendrick
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)

261–62 *Public Finance and Fiscal Policy* (3–3) Moor
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)

263–64 *Theory of Public Finance* (3–3) deVries
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)

265–66 *Theory of Economic Policy* (3–3) Watson
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)

267 *The Soviet Economy* (3) Gekker
Development of the Soviet-type economy; organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145–46, 247, and Geography 166.) (Fall—evening.)

281–82 *International Economics* (3–3) Schmidt
First half: the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)

284 *United States Foreign Economic Policy* (3) Schmidt
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Not offered 1963–64.)

285–86 *Economic Development of Latin America* (3–3) Sammons
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)

287–88 *Latin America: Trade and Commodity Policy* (3–3)
Tariffs and exchange control systems, bilateral and general commercial agreements, terms of trade. (Not offered 1963–64.)

290 *Seminar in International Economics* (3) Schmidt
Advanced topics in international economics. Prerequisite: Economics 281–82 or the equivalent. (1963–64 and alternate years: spring—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following economics courses for students enrolled in Navy Graduate Financial Management Program and Air Force Advanced Management Program.

191 *Foreign Economic Policies and Problems* (3)

195 *Governmental and Industrial Economics* (3)

ENGLISH*

Professors E. S. Shepard, F. S. Tupper, C. D. Linton, C. W. Cole *(Chairman)*, R. H. Moore, J. H. Coberly†, P. H. Highfill, Jr., J. G. Allee, Jr., J. P. Reesing, Jr.‡
Adjunct Professor Carroll Hollis
Associate Professors W. L. Turner, Muriel McClanahan, R. H. Walker, Jr., R. E. Gajdusek
Assistant Professors Elizabeth Wright, M. E. Lyon, R. C. Rutledge, Louise Clubb
Lecturer J. J. Monroe
Instructors Dorothy Clark, L. E. Dodd, Arlyn Edelman, G. C. Landon, Frank Turaj
Associates J. S. Toomey, Eileen Allen, Karen Holum, K. T. Simendinger, V. C. Trofi

Bachelor of Arts with a major in American Thought and Civilization (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 31.
Required: the general requirements, pages 38–41, and the grade "pass" on the American Thought and Civilization major examination at the end of the senior year. The coordinated

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave spring semester 1962–63.
‡ On sabbatical leave fall semester 1962–63.

field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history—the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 179–80) intended to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

Bachelor of Arts with a major in English Literature (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 31. It is recommended that prospective majors elect English 91–92 from among the listed offerings.

Required: the general requirements, pages 38–41, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199–200) to assist the student in preparing himself for the major examination. A detailed description of the major is available in the Office of the Dean of Columbian College.

Master of Arts in the field of American Literary and Cultural History.—Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of the above majors at this University must take a candidacy examination.

Required: in addition to the general requirements, pages 43–46, the following specific requirements must be met: twelve of the required semester hours must be of seminar study, six in American history and six in American literature; twelve of the required semester hours must be of second and third group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six semester hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

Master of Arts in the field of English and American Literature.—Prerequisite: an undergraduate major in English Literature or American Thought and Civilization at this University; or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not taken either of the above majors at this University must take a candidacy examination. The student offering split preparation (English and American literature) will be examined in English and American literature.

Required: in addition to the general requirements, pages 43–46, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination on American literature and on English literature from 1600.

Master of Arts in the field of English Literature.—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four semester hours in English litera-

ture above the sophomore level. The student who has not passed the major examination in English at this University must take a candidacy examination which, in its scope and difficulty, is comparable to the major examination in English.

Required: in addition to the general requirements, pages 43–46, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a final written examination.

Master of Arts in the field of Linguistics.—See pages 99–100, and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in English.—Prerequisite: the Education curriculum, pages 33–34.

Required: the English option and the professional courses listed in the School of Education Catalogue.

ENGLISH COMPOSITION*

FIRST GROUP

A *English for Foreign Students* (3) Allee and Staff

A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1963.)

B *English for Foreign Students* (3) Allee and Staff

For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and styles. (Fall—evening; spring—day and evening.)

1 *English Composition** (3) Moore and Staff

Review of grammar, exercises in composition, readings. (Fall and spring—day and evening; summer 1963.)

1X *English Composition** (3) Moore and Staff

An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets five hours a week and carries 3 semester hours of credit. The tuition fee is $124 (the regular fee of $23 a semester hour, plus an additional fee of $25). (Fall and spring—day and evening; summer 1963.)

2 *English Composition** (3) Moore and Staff

For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X. (Fall and spring—day and evening; summer 1963.)

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon these further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

Students enrolled in curricula leading to Bachelor's degrees in Columbian College who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages or Spanish, will follow the sequence of English 1 or 1X, English 2, courses of one of the introductory literature courses, and English 4.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students not required to follow the Columbian College of Arts and Sciences sequence.

4 *English Composition** (3) Moore and Staff
The second half of the six-hour English Composition course required of students in Columbian College. A course in critical analysis and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1963.)

11 *The Writing of Reports* (3) Turner and Staff
Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X, and 2 or 4. (Fall and spring—day and evening.)

SECOND GROUP

109 *Expository Writing* (3) McClanahan
A study of types of expository writing with weekly exercises. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—evening.)

113 *Narrative Writing* (3) Gajdusek
Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—day and evening.)

114 *The Writing of Fiction—the Short Story* (3) Gajdusek
Prerequisite: English 113; consent of instructor. (Spring—evening.)

117–18 *The Writing of Fiction—the Novel* (3–3) Gajdusek
Writing a novel. Prerequisite: English 114; consent of instructor. (Academic year—evening.)

ENGLISH LITERATURE

FIRST GROUP

51–52 *Introduction to English Literature*† (3–3) Tupper and Staff
A historical survey. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

91–92 *Introduction to European Literature*† (3–3) Shepard and Staff
Consideration of various types. Prerequisite: English 1 or 1X. (Academic year—day and evening.)

SECOND GROUP†

121–22 *English Literature from the Beginnings to 1500* (3–3) Allee
First half: English literature prior to Chaucer. *Second half:* Chaucer. (*First half:* not offered 1963–64. *Second half:* spring—evening.)

125 *Introduction to English Linguistics* (3) Allee
The development of the English language in a historical treatment of English grammar. (Fall—evening.)

129–30 *Elizabethan Nondramatic Literature* (3–3) Tupper
Nondramatic literature from 1485 to 1601. (Not offered 1963–64.)

135–36 *Shakespeare* (3–3) Tupper
(Academic year—evening; summer 1963—English 135 (3).)

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* See footnote on page 79.

† All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 125.

139–40 *The 17th Century* (3–3) Reesing
First half: poetry and prose from 1603 to 1660. *Second half:* Milton. (Academic year—day; summer 1963—English 139 (3).)

141–42 *The Neoclassical Movement* (3–3) Highfill
Poetry and prose from 1660 through the mid-18th century. (Not offered 1963–64.)

151–52 *The Romantic Movement* (3–3) Reesing
From the mid-18th century through Shelley and Keats. (Academic year—day.)

161–62 *Victorian Literature* (3–3) Shepard
Poetry and prose from 1830 to 1900. (Academic year—day.)

165–66 *The 20th Century* (3–3) Linton
British poetry, prose, and drama since 1900. (*First half:* fall—day. *Second half:* not offered 1963–64.)

181–82 *The English Novel* (3–3) Clubb
Major English novelists from the 18th century to the present day. (Academic year—evening.)

183–84 *The English Drama* (3–3) Highfill
First half: concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day. (Academic year—day; summer 1963—English 183 (3).)

192 *Medieval Legend and Saga* (3) Allee
Celtic and Norse. (Summer 1963.)

199–200 *Proseminar: Readings for the English Literature Major* (3–3) Tupper, Highfill, Reesing
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

223–24 *Old English* (3–3) Allee
English language and literature from 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf. (Not offered 1963–64.)

235–36 *Studies in Shakespeare and His Contemporaries* (3–3) Tupper
Prerequisite: English 135–36. (Academic year—evening; summer 1963—English 236 (3).)

239–40 *Studies in 17th Century Literature* (3–3) Reesing
Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton. (Not offered 1963–64.)

241–42 *Studies in Neoclassical Literature* (3–3) Highfill
Prerequisite: English 141–42. (Academic year—evening.)

251–52 *Studies in the Romantic Movement* (3–3) Reesing
Prerequisite: English 151–52. (Not offered 1963–64.)

261–62 *Studies in Victorian Literature* (3–3) Shepard
Prerequisite: English 161–62. (Academic year—evening.)

265–66 *Studies in 20th Century Literature* (3–3) Linton
Eliot and his contemporaries. (Not offered 1963–64.)

273–74 *Research Methods and Bibliographical Materials* (3–3) Hollis
For description of course see American Literature 273–74, page 82.

295–96 *Studies in the History of English Literary Criticism* (3–3) Shepard
Open to undergraduates with the approval of the instructor. (Not offered 1963–64.)

299–300 *Thesis* (3–3) The Staff

AMERICAN LITERATURE

FIRST GROUP

71–72 *Introduction to American Literature** (3–3) Cole and Staff
A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

170 *The American Short Story* (3) Coberly
The historical development of the short story in America. (Fall—day.)

171–72 *Studies in American Literature* (3–3) Lyon
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51–52 or 71–72. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

173–74 *Major American Poets* (3–3) Lyon
Advanced critical study of significant writers and movements. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day; summer 1963—English 174 (3).)

175–76 *American Drama* (3–3) Cole
Historical and critical study of significant plays and forms. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years; academic year—evening; summer 1963—English 176 (3).)

177–78 *American Fiction* (3–3) Coberly
Historical and critical study of significant novels and short stories. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

179–80 *Proseminar: Readings for American Thought and Civilization Majors* (3–3) The Staff
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

271–72 *Seminar in American Thought* (3–3) Walker
Intensive consideration of specific periods and themes, primarily literary, in the history of American civilization. Prerequisite: English 171–72 or the equivalent. (Not offered 1963–64.)

273–74 *Research Methods and Bibliographical Materials* (3–3) Hollis
To acquaint graduate students with the principal sources of bibliography and with typical problems in research. (Academic year—evening.)

277–78 *Studies in American Fiction* (3–3) Coberly
Prerequisite: English 177–78 or the equivalent. Open to the undergraduate with the approval of the instructor. (Not offered 1963–64.)

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* All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 171–72.

281–82 *Reading Course in American Civilization* (3–3) Walker
A consideration of the principal descriptive and interpretative works dealing with American civilization, with emphasis on the interdisciplinary understanding of this subject. Prerequisite: at least one upper-division or graduate course in both American literature and American history. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

287–88 *Reading Course in American Fiction* (3–3) Coberly
Primarily for graduate students, designed to cover the literature and the critical materials for which the student will be responsible on comprehensive and final examinations. (*First half:* not offered 1963–64. *Second half:* spring—evening.)

289–90 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72 *Greek and Roman Backgrounds in Literature* (3–3)
Education 136, *Teaching English*
History 151–52, *English History*
Philosophy 111–12, *History of Philosophy*
Speech B, *American Speech for Foreign Students*
Speech 102, *Oral Interpretation of Literature*

GEOGRAPHY AND REGIONAL SCIENCE*

Professor R. D. Campbell *(Chairman)*
Associate Professors J. T. Davis, H. W. Westermann†
Associate Professorial Lecturer M. F. Levine
Assistant Professor A. R. Gassaway

Bachelor of Arts with a major in Geography (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Geography 51, 52, and Geology 1–2. Required: in addition to the general requirements, pages 38–41, twenty-six semester hours of Geography beyond first-group courses, including Geography 103–4 and 189–90, twelve hours from Group A and six hours from Group B.
Group A: Geography 126, 127, 141–42, 145, 146. Group B: Geography 151, 153, 154, 155, 156, 161, 164, 165, 166, 167, 168.

Bachelor of Arts with a major in Urban and Regional Development (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Geography 51, 52; Geology 1–2; and Statistics 91.
Required: in addition to the general requirements, pages 38–41, thirty-two semester hours of Geography which must include Geography 103–4, 133, 134, 141–42, and 173–74. Required also are Political Science 104 and Statistics 117. It is recommended that electives be chosen from among the following courses: Sociology 126, 135, 137, 147; Economics 161–62; Political Science 146; History 111–12; and Philosophy 121–22.

* The Staff of Instruction is for the academic year 1962–63.
† On leave of absence 1962–63

Bachelor of Arts with a major in Regional Science (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Geography 51, 52; Geology 1–2; Statistics 91; and Mathematics 21, 22, 23, 24.

Required: in addition to the general requirements, pages 38–41, thirty semester hours of Geography, which must include Geography 103–4, 133, 134, 141–42, 199–200. Required also are Statistics 117, 118, 157–58; and Philosophy 121–22.

Master of Arts in the field of Geography.—The general requirements, pages 43–46, including Geography 201–2, 205–6, and 299–300.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Science in Cartography.—See pages 86–87, "Courses Offered in Special Programs" and the College of General Studies Catalogue for complete details.

Bachelor of Arts in Education with a teaching field in Geography.—Prerequisite: the Education curriculum, pages 33–34.

Required: the Geography option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

51 *Introduction to Geography* (3) The Staff

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall—day; spring—evening; summer 1963.)

52 *World Regions* (3) The Staff

The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall—evening; spring—day; summer 1963.)

SECOND GROUP

103–4 *Cartography* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting; elementary map projections; map and graph planning design and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester. (Academic year—Saturday morning.)

124 *Land Capabilities* (3) Davis

Evaluation of land capabilities based on analysis of locational, physical, economic, and social land characteristics. Principles of site analysis and best use. Systems of measurement of area potential. (1963–64 and alternate years: fall—evening.)

125 *Transportation Complexes* (3) Davis

A study of transportation networks and systems by which people, things, and ideas are given varying degrees of place utility. An analysis of the role of transportation in urban, national, and international relationships. (1963–64 and alternate years: spring—evening.)

126 *World Economies* (3)

Description and comparison of differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (1964–65 and alternate years.)

127 *World Population and Settlement* (3)

Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (1964–65 and alternate years.)

133 *Regional Industrial Structures* (3)

The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1964–65 and alternate years.)

134 *Location of Industry* (3)
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1964–65 and alternate years.)

137 *Industrial Planning for Underdeveloped Areas* (3)
The appraisal of industrial development potentials in non-industrial areas; the preparation and implementation of industrial development plans; peculiar problems of industrial development in traditional societies; the role of industrialized countries, with particular emphasis on United States responsibilities. (Fall—day.)

141–42 *Urban Settlement* (3–3) Davis
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1963–64 and alternate years: academic year—day.)

145 *World Cultural Geography* (3) Campbell
A study of differences in national character structures; modal behavior patterns and personality traits typical of various cultures; difficulties these differences present in interpersonal relations and intercultural communications. (Fall—day.)

146 *World Political Geography* (3) Campbell
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Spring—day.)

151 *United States** (3) (Formerly Geography 181)
(Not offered 1963–64.)

153 *Western Europe** (3) (Formerly Geography 183)
(1964–65 and alternate years.)

154 *The Mediterranean** (3) (Formerly Geography 184)
(1964–65 and alternate years.)

155 *Africa** (3) (Formerly Geography 185) Gassaway
(Fall—day.)

156 *The Middle East** (3) (Formerly Geography 186) Gassaway
(Spring—day.)

161 *Latin America** (3) (Formerly Geography 191)
(Fall—day.)

164 *Communist China** (3) (Formerly Geography 194)
(1964–65 and alternate years.)

165 *Eastern and Southeastern Asia** (3) (Formerly Geography 195)
(Spring—day.)

166 *The Soviet Union** (3) (Formerly Geography 196)
(1964–65 and alternate years.)

167 *The Pacific** (3) (Formerly Geography 197)
(Not offered 1963–64.)

168 *Australia** (3) (Formerly Geography 198)
(Not offered 1963–64.)

173–74 *City Planning: Theory and Practice* (3–3)
Theories of city functions and structures; evaluation of urban activities, value systems; analysis of contemporary urban problems; optimum designs for future cities; theory

* Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended; for example: Economics 185–86, *Economic History and Problems of Latin America*; History 148, *South America since Independence*; and Political Science 177, *Recent Trends in Latin American Politics and Government*.

and techniques of planning; action techniques; implementation of plans. (1964–65 and alternate years.)

175–76 *City Planning: Survey and Design* (3–3)
Information systems for city planning; methods of analysis of urban data; and the design of proposed urban development and renewal. (*First half:* summer 1963. *Second half:* not offered 1963–64.) The Staff

179–80 *Readings in Urban and Regional Development* (1–1)
(Academic year—as arranged.) The Staff

189–90 *Readings in Geography* (1–1)
(Academic year—as arranged.)

199–200 *Theory of Regions* (3–3)
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1963–64.)

THIRD GROUP*

201–2 *Seminar: History and Philosophy of Geography* (3–3)
A year course: credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1964–65 and alternate years.) Davis

205–6 *Area Data Collection and Analysis* (3–3)
A year course: credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information; methods and systems of data collection; quantitative and qualitative methods of analysis; systems of synthesis. (1963–64 and alternate years: academic year—evening.)

211–12 *Reading Course in Economic Geography* (3–3)
The development of economic geography as a systematic approach to regional analysis. the literature of economic geography, research methods. (Not offered 1963–64.)

233–34 *Seminar: Regional and Urban Planning* (3–3)
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (Academic year—evening.) Campbell

241–42 *Seminar: Place and Culture* (3–3)
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (1963–64 and alternate years: academic year—evening.) Gassaway

251–52 *Seminar: World Problem Areas* (3–3)
A study of those parts of the world which have become matters of international concern, whether because of their political or social instability, unsound economic development, or aggressive tendencies. An evaluation of the complex of factors which have created the "problems". (Academic year—evening.) The Staff

295–96 *Research* (3–3)
(Academic year—as arranged.) The Staff

299–300 *Thesis* (3–3)

COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following courses for students undertaking work toward the degree of Bachelor of Science in Cartography, which is administered by the College of General Studies. For information concerning the degree in Cartography, see the brochure on the subject.

* Senior major or graduate status is required in all third-group courses.

Cartography Program

Geography

51 *Introduction to Geography* (3)
52 *World Regions* (3)
115–16 *Physical Geography* (3–3)
124 *Land Capabilities* (3)
125 *Transportation Complexes* (3)

Cartography

1 *Map Interpretation* (3)
11 *Cartographic Drafting and Descriptive Geometry* (3)
12 *Topographic Surveying* (3)
13 *Higher Surveying* (3)
17–18 *Elementary Photogrammetry* (3–3)
110 *Map Projections* (2)
111 *Map Reproduction* (1)
155 *Elementary Geodesy* (3)
156 *Geodetic Astronomy* (3)
160 *Theory of Errors and Geodetic Adjustments* (3)
191–92 *Map and Chart Construction* (3–3)

Oceanography

101–2 *Introductory Oceanography* (3–3)

GEOLOGY*

Professor Geza Teleki *(Chairman)*
Professorial Lecturers C. L. Christ, Michael Fleischer, H. T. Evans, Jr., I. G. Sohn, Nicholas Hotton
Associate Professor G. V. Carroll
Associate Professorial Lecturers Daniel Appleman, P. M. Kier, J. T. Dutro, Jr.
Lecturer Irving Friedman

Bachelor of Arts or *Bachelor of Science with major in Geology (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32. The following first-group courses must be included: Geology 1–2, 12; Chemistry 11–12; Physics 11, 12; Mathematics 21.
Required: in addition to the general requirements, pages 38–41, twenty-seven semester hours in Geology beyond first group courses for the Bachelor of Arts degree, thirty-three for the Bachelor of Science degree.

* The Staff of Instruction is for the academic year 1962–63.

Master of Arts or *Master of Science in the field of Geology.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or the equivalent.

Required: the general requirements, pages 43–46. Candidates must take their Master's Examination (pages 45–46) which must be passed before the writing of the thesis is begun. A reading knowledge examination in French, German, or Russian must be passed before the second-half of the work is started.

FIRST GROUP

The Staff

1–2 *Introductory Geology* (3–3)
Lecture (2 hours), laboratory and field trip (2 hours). A survey course covering the principles of geology. Laboratory fee, $6 a semester. (Academic year—day; summer 1963.)

Carroll

12 *Minerals and Rocks* (3)
Lecture (2 hours), laboratory (3 hours). Introduction to the common minerals and rocks and their environments; identification of minerals by determination of their physical properties and by the use of elementary chemical tests. Prerequisite: Geology 1. Laboratory fee, $8. (Spring—day.)

SECOND GROUP

Teleki

101 *History of Geological Sciences* (2)
Lectures on the development of geological thought and the history of geological and related sciences. (1964–65 and alternate years.)

Teleki

107 *Dynamic Geology* (3)
Lecture (3 hours), recitation (1 hour). The interrelation of endogene and exogene forces in the processes of sedimentation and vulcanism; geochemical and geophysical aspects of epicontinental and geosynclinal areas. Prerequisite: Geology 1; Physics 11, 12; or permission of the instructor. (Fall—day.)

Carroll

111–12 *Mineralogy* (3–3)
A year course, credit is not given for the first half until the second half has been completed (except for chemistry majors who may receive credit for the first half only). Lecture (2 hours), laboratory (3 hours). *First half:* morphological crystallography and elementary aspects of optical crystallography with their application to the identification of minerals. *Second half:* optical mineralogy; identification of nonopaque minerals by use of the polarizing microscope. Prerequisite: Geology 1 and 12; Physics 11, 12, or permission of the instructor. Laboratory fee, $10 a semester. (Academic year—evening.)

Carroll

115 *Petrography* (4)
Lecture (2 hours), laboratory (4 hours). Megascopic and microscopic identification and classification of common rocks. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

116 *Sedimentary Petrography* (4)
Lecture (2 hours), laboratory (4 hours). The mineralogy and chemistry of sediments and sedimentary rocks; identification, description, and classification of sedimentary rocks with megascopic and microscopic methods. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

Carroll

117 *Introduction to Petrology* (3)
Lecture (2 hours), laboratory (3 hours). Lectures on petrogenic theory with emphasis on igneous and metamorphic rocks; laboratory work on the diagnosis of rock genesis by polarizing microscopic determination of mineralogical and textural characteristics. Prerequisite: Geology 115. Laboratory fee, $10. (Fall—evening.)

122 *Structural Geology* (3)
Carroll
Lecture (2 hours), laboratory and field trips as arranged. Genetic interpretation of geologic formations on the basis of their structures, with emphasis on applications to geological field work. Prerequisite: Geology 1–2 or 1 and 12. (Spring—day.)

123 *Tectonics* (3)
The Staff
Lecture (1 hour), laboratory (4 hours.) Introduction to specialized techniques of structural analysis, and to tectonic theory. Prerequisite: Geology 122. Recommended: Applied Science 3. (1964–65 and alternate years.)

125 *Marine Geology* (3)
The Staff
Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geology 1–2 or 1 and 12; for students of fields other than geology, permission of the instructor. (Fall—day.)

128 *Geomorphology* (4)
Teleki
Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 107 or Geography and Regional Science 115–16. (1964–65 and alternate years.)

130 *Photointerpretation* (4)
Teleki
Lecture (2 hours), laboratory (3 hours). Principles of photogrammetry, interpretation of geographical and geological features on aerial photographs, evaluation of data with stereoscopic methods. Laboratory fee, $10. (Spring—evening.)

151–52 *Invertebrate Paleontology* (3–3)
Teleki
Lecture (2 hours), laboratory (3 hours), field trips as arranged. Classification and evolution of fossil invertebrates, paleoecology of invertebrate organisms. Prerequisite: Geology 1–2 or 1 and 12. Laboratory fee, $8 a semester. (Academic year—day.)

154 *Vertebrate Paleontology* (3)
Hotton
Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (1964–65 and alternate years.)

157 *Methods in Paleontology* (3)
Sohn
An introduction to the principles and techniques of paleontological research, including the rules of zoological nomenclature. Prerequisite: Geology 151–52. (Fall—evening.)

163 *Sedimentation* (4)
Lecture (2 hours), laboratory (4 hours). Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 12 and 107. Laboratory fee, $10. (Fall—day.)

166 *Stratigraphy* (4)
Teleki
Lecture (2 hours), laboratory (4 hours). Sedimentation, facies, evaluation of stratigraphic boundaries, principles of correlation, applied stratigraphic geology. Prerequisite: Geology 107, 115, 122, 163. (Spring—day.)

173 *Regional Geology* (3)
Carroll and Staff
Lecture (3 hours), recitation (1 hour). Lecture and map work on the regional distribution of geological formations and structures. This course may be reelected for credit. Prerequisite: Geology 107, 122, or permission of the instructor. (Fall—day.)

192 *Laboratory Techniques* (2)
Lecture (1 hour), laboratory (3 hours). An introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, $15. This course may be repeated for credit, with the approval of the Department. (Spring—evening.)

THIRD GROUP

205–6 *Seminar in Geology* (3–3) The Staff
Special topics. Does not repeat itself and may be elected in successive years. (Academic year—as arranged.)

211 *X-ray Crystallography* (3) Christ
The structure of crystals as determined by the X-ray method (1964-65 and alternate years.)

212 *Crystal Chemistry** (3) Evans
Chemistry of the solid state. Bounding and coordination and the role of crystalline structure in chemistry and mineralogy (1964-65 and alternate years.)

241 *Geochemistry** (3) Fleischer
Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species. (Fall—evening.)

244 *Isotope Geology** (3) Friedman
Investigation of geological phenomena by means of stable and unstable isotopes of elements and of changes in their abundance. (Spring—evening.)

251–52 *Micropaleontology* (4–4) Sohn
Lecture (2 hours), laboratory as arranged. Identification with the binocular microscope of Ostracoda and other fossil micro-organisms. Micropaleontological techniques, paleontological research methods, taxonomy, and paleoecology. Age determination and correlation of stratigraphic units. Laboratory fee, $12 a semester. (1964–65 and alternate years.)

257–58 *Seminar in Paleontology* (3–3) The Staff
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be reelected for credit. (Academic year—as arranged.)

267–68 *Seminar in Stratigraphy* (3–3) The Staff
Independent topics each semester. Can be elected for either semester does not repeat itself and can be reelected for credit. (1964–65 and alternate years.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

GERMANIC LANGUAGES AND LITERATURES†

Professors W. K. Legner *(Chairman)*, Gretchen Rogers
Associate Professor J. C. King‡
Assistant Professors H. D. Osterle, Klaus Thoenelt
Associate Anne Cordero

Bachelor of Arts with a major in Germanic Languages and Literatures (Departmental). —Prerequisite: the Arts and Letters curriculum, page 31.
Required in addition to the general requirements, pages 38–41, German 51–52, plus eighteen semester hours in German courses, above the first group; reasonable proficiency

* Prerequisite: an adequate background in physics and chemistry, to be determined in conference with the instructor.
† The Staff of Instruction is for the academic year 1962–63.
‡ On sabbatical leave spring semester 1962–63.

in speaking and writing German; History 39–40 or the equivalent; six semester hours in Philosophy selected with the approval of the adviser. Majors in German are strongly advised to study French.

Master of Arts in Germanic Languages and Literatures.—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.

Required: the general requirements, pages 43–46, including a reading knowledge of French and a thesis in the field of German literature or linguistics.

Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).—Prerequisite: a Bachelor of Arts degree, preferably with a major in French, German, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required, the general requirements, pages 43–46, including a thesis and 24 semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, German, Mathematics, Psychology, and Spanish listed on page 100.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in German.—Prerequisite: the Education curriculum, pages 33–34.

Required: the German option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

1–2 *First-year German* (3–3) The Staff

A year course; credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

3–4 *Second-year German* (3–3) The Staff

A year course; credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: German 1–2 or two years of high school German. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *German Conversation and Composition* (3–3) Osterle

Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (Academic year—day.)

47 *Beginning German for Reading Examination Candidates* (0) The Staff

Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, $99 (Fall and spring—evening; summer 1963.)

49 *German Readings for Nonmajor Students* (3) The Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1963.)

51–52 *Introduction to German Literature* (3–3) Osterle

Prerequisite: German 4 or the equivalent. (Academic year—evening.)

SECOND GROUP

103–4 *Goethe's "Faust"—Parts I and II* (3–3) Legner
(1964–65 and alternate years.)

131–32 *German Literature of the 18th Century* (3–3) Rogers
The age of Lessing, Goethe, and Schiller. (1963–64 and alternate years: academic year—evening.)

141–42 *German Literature of the 19th Century* (3–3) King
Romanticism, Biedermeier period, Young Germany, Realism. (1963–64 and alternate years: academic year—evening.)

151–52 *German Literature of the 20th Century* (3–3) Rogers
(1964–65 and alternate years.)

179–80 *Advanced Composition for Undergraduate and Graduate Majors* (1–1) King, Legner
(Academic year—as arranged.)

THIRD GROUP

201–2 *Middle High German* (3–3) Legner
(1963–64 and alternate years: academic year—evening.)

205–6 *Gothic* (3–3) Legner
Introduction to the comparative study of Germanic languages. (1964–65 and alternate years.)

209–10 *Old High German* (3–3) King
(1964–65 and alternate years.)

213–14 *Old Norse* (3–3) Allee
(1963–64 and alternate years: academic year—evening.)

219 *Teaching German in College* (3) The Staff
Methodology, observation, and apprenticeship in college classes and the language workshop. (Fall—as arranged.)

223–24 *Linguistic Analysis of Modern German* (3–3) King
Treatment of phonetics, phonemics, morphology, and syntax. (1963–64 and every third year: academic year—day.)

225–26 *Seminar: Linguistics* (3–3) King, Allee
Bibliography, methodology, readings, and research problems. (1965–66 and every third year.)

227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) King
Old Indic language and literature. (1964–65 and alternate years.)

229 *German Literature of the 15th and 16th Centuries* (3) Legner
Transition from chivalric to bourgeois literature. The eras of Humanism and the Reformation as reflected in the principal literary works. (1963–64 and alternate years: fall—day.)

230 *German Literature of the 17th Century* (3) Legner
Imitation of foreign models. The literary societies. Preciosity. The beginnings of realism in the novel. Pietism. (1963–64 and alternate years: spring—day.)

231–32 *German Classicism* (3–3) Rogers
An advanced study and critique of the literature of the Goetheszeit. Prerequisite: German 131–32 or the equivalent. (1964–65 and alternate years.)

241–42 *Seminar: German Romanticism* (3–3) King
Treatment of individual writers, groups, motifs, and tendencies. (1964–65 and alternate years.)

251–52 *Seminar: Studies in 20th Century German Literature* (3–3) Rogers
Special projects in fiction, drama, poetry, and criticism. (1963–64 and alternate years: academic year—day.)

261–62 *German-English and German-American Literary Relations and Interactions* (3–3) Osterle
Comparative study of major genres. Appraisal of influences. (Not offered 1963–64.)

271–72 *Seminar: German Literature* (3–3) Thoenelt
French-German literary interactions and contrasts. *First half:* Romantic and realistic narrative and essay. *Second half:* Romain Rolland, Camus, René Schickele, Heinrich Mann. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree in German. (Academic year—as arranged.)

HISTORY*

Professors E. L. Kayser, Wood Gray, H. M. Merriman, R. H. Davison *(Chairman)*, W. C. Davis, R. B. Thompson
Associate Professor R. C. Haskett
Associate Professorial Lecturers R. P. Multhauf, J. I. Robertson, Jr.
Assistant Professors C. J. Herber, P. P. Hill, R. W. Kenny

Bachelor of Arts with a major in History (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 31, including History 39–40 and 71–72.
Required: the general requirements, pages 38–41 and the grade of "pass" on the History major examination at the end of the senior year.
The major, centered on the study of the rise, development, and spread, and the continuing challenges of Western civilization, is attested by a major examination. Under the guidance of an adviser the student will arrange his program in History to attain a balanced coverage of (1) the rise of civilization in Europe to the eve of the French Revolution, (2) the development of non-Western civilizations and their interaction with the Western world, (3) the historic problems of modern industrial civilization from the beginnings of the Industrial Revolution, and (4) the relations of the major nations of Europe and America in their world setting since the Napoleonic Wars. A six-hour research seminar to give training in fundamental technics is a required part of each major's program, and a proseminar (History 199–200) is offered as a means of integrating the student's understanding of the continuity of Western civilization. For details relating to the administration and content of the major, see the pamphlet on this subject, which is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the History Department.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, see page 31.
Required: the general requirements, pages 38–41, and the grade of "pass" on the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes political and social

* The Staff of Instruction is for the academic year 1962–63.

history, economic development, governmental structures and international relations, and the principal literary works and writers of the Latin American republics. The Department of History provides a proseminar (History 197–98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College of Arts and Sciences.

Master of Arts in the field of History.—Prerequisite: the degree of Bachelor of Arts with a major in History from this University, or the equivalent, and the approval of the Department.

Required: the general requirements, pages 43–46. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third-group history courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Master of Arts in the field of Latin American Civilization.—Prerequisite: the degree of Bachelor of Arts with a major in Latin American Civilization from this University, or the equivalent.

Required: the general requirements, pages 43–46. Course work and the comprehensive examinations will embrace political and social history, governmental structures and international relations, economic development, and principal literary works of Latin America. The thesis may be written in any one of these four fields. All courses must be approved in advance by the Adviser.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in History.—Prerequisite: the Education curriculum, pages 33–34.

Required: the History option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

39–40 ***The Development of European Civilization*** (3–3) — Kayser, Herber, Kenny

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present. (Academic year—day and evening; summer 1963.)

71–72 ***The Development of the Civilization of the United States*** (3–3) — Haskett, Hill

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

105–6 ***Introduction to the History of Science*** (3–3) — Multhauf

First half: the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half:* the main lines of development of astronomy, physics, chemistry, biology, and medicine from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39–40 or a background in science. (Academic year—evening.)

109–10 ***Ancient History*** (3–3) — Kayser

The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Not offered 1963–64.)

111–12 ***Medieval History*** (3–3) — Kayser

The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)

* History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 170 through 184; either History 39–40 or 71–72, to courses 161 through 166.

130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. (Summer 1963.)

131–32 *History of Germany* (3–3) Herber
The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1963–64.)

141–42 *History of France* (3–3) Herber
A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)

145–46 *History of Russia* (3–3) Thompson
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860–1881. *Second half:* Revolution and Soviet rule, 1881–1960. (Academic year—evening; summer 1963.)

147 *Economic History of Europe* (3) Gray
A survey from ancient times to the present day. (Not offered 1963–64.)

148 *Oversea Expansion of Europe* (3)
International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the 19th and 20th centuries. (Not offered 1963–64.)

149–50 *European Diplomatic History* (3–3) Davison
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. (*First half:* 1963–64 and alternate years; fall—day. *Second half:* spring—day and evening.)

151–52 *English History* (3–3) Kenny
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half:* to 1689. *Second half:* since 1689. (Academic year—day and evening; summer 1963—History 152 (3).)

161 *Ancient Americans* (3) Davis
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (1964–65 and alternate years.)

162 *Iberian Background of Latin America* (3) Davis
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (1964–65 and alternate years.)

163 *Colonial Latin America* (3) Davis
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—day.)

164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. (Alternate spring and summer terms: summer 1964; spring 1965.)

166 *Mexico and the Caribbean since Independence* (3) Davis
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Alternate spring and summer terms: spring—day; summer 1963.)

170 *American Colonial History* (3) Haskett
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Spring—evening.)

171–72 *Social History of the United States* (3–3) Gray
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time. (Academic year—day; summer 1963—History 171 (3).)

173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Spring—evening; summer 1963.)

174 *Economic History of the United States* (3) Gray
Main trends in the development of American agriculture, industry, and trade since 1607, with their Old World backgrounds and in their world setting. (Fall—day.)

175–76 *Political and Constitutional History of the United States* (3–3) Haskett
First half: to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1963—History 176 (3).)

177 *The South* (3) Robertson
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Spring—day.)

178 *The West* (3)
The role of the frontier in American history. (Not offered 1963–64.)

179 *The Civil War* (3) Robertson
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself; the immediate and long-range effects of the War on American life. (Fall—day.)

181–82 *Diplomatic History of the United States* (3–3) Merriman, Hill
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1963—History 182 (3).)

183 *Oversea Expansion of the United States* (3) Merriman
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)

184 *Canada and the United States* (3) Merriman
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (Fall—day.)

190 *History of India* (3) Thompson
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1963–64.)

191–92 *Current History* (1–1) Davison
Contemporary events in their world setting. (Not offered 1963–64.)

193 *History of the Near East* (3)
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (1964–65 and alternate years.)

195–96 *History of the Far East* (3–3) Thompson
First half: the civilization of China and Japan from the beginnings to 1600. *Second half:* the modern Far East under the impact of the West since 1600. (*First half:* fall—day. *Second half:* not offered 1963–64.)

197–98 *Proseminar in Latin American Civilization* (3–3) Davis, Robb, Sammons
Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the History Major* (3–3) Thompson
Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, in its world setting, including representative selections from the classics of historical literature. (Academic year—evening.)

THIRD GROUP*

211–12 *Reading Course in Medieval History* (3–3)
Primarily for graduate students. (Not offered 1963–64.)

241–42 *Seminar in Modern European History* (3–3) Herber
(Academic year—evening.)

243 *Reading Course in Modern European History* (3) Davison
For graduate students. (Fall—day.)

245–46 *Seminar in Eurasian History* (3–3) Thompson
(*First half:* not offered 1963–64. *Second half:* spring—day.)

247–48 *Reading Course in Russian History* (3–3) Thompson
For graduate students. (Academic year—day.)

249 *Seminar in European Diplomatic History* (3) Davison
(Spring—day.)

251–52 *Seminar in English History* (3–3) Kenny
(Academic year—evening.)

261–62 *Seminar in Latin American History* (3–3) Davis
(*First half:* summer 1963. *Second half:* not offered 1963–64.)

271–72 *Seminar in the Social History of the United States* (3–3) Gray
(Academic year—day.)

273–74 *Reading Course in American Economic and Social History* (3–3) Gray
For graduate students. (Academic year—evening.)

275–76 *Seminar in American Political and Constitutional History* (3–3) Haskett
(Academic year—evening.)

277–78 *Reading Course in American Political and Constitutional History* (3–3) Haskett
For graduate students. (*First half:* 1964–65 and alternate years; fall—day. *Second half:* 1963–64 and alternate years; fall—day.)

281–82 *Seminar in the Diplomatic History of the United States* (3–3) Merriman
(Academic year—day.)

285–86 *Reading Course in American Diplomatic History* (3–3) Merriman
For graduate students. (Academic year—evening.)

291–92 *Seminar* (3–3) The Staff
Prerequisite: approval of the Department. (Academic year—as arranged; summer 1963—History 291 (3).)

294 *Seminar in the History of the Modern Near East* (3) Davison
(Fall—evening.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1963.)

* Approval of the instructor is required for registration in each third-group course.

JOURNALISM *

Professor R. P. Schlabach, Jr.† *(Chairman)*
Associate Professor R. C. Willson
Lecturers F. L. Dennis, J. V. Hinkel, Louis Robinson, T. R. Smith, H. L. Coppenbarger, D. W. Gottlieb

Bachelor of Arts with a major in Journalism (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including English 51–52, or 71–72, History 71–72, Political Science 9–10, and Journalism 71–72.

Required:

(1) The general requirements, pages 38–41.

(2) Twenty-four hours of second-group courses in Journalism, as follows: (a) Journalism 111, 196, 198; (b) nine hours chosen from Journalism 121, 133, 137, 144, 151; (c) six hours chosen from Journalism 115, 140, 142, 143, 145.

(3) Twelve hours of second-group courses, chosen in consultation with the major adviser, in one other department of Columbian College of Arts and Sciences. Students selecting science may take courses in more than one department.

FIRST GROUP

71–72 *Journalism in American Society* (3–3) Schlabach, Willson
Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; problems of contemporary journalism. (Academic year—day and evening.)

SECOND GROUP

111 *Reporting* (3) Coppenbarger, Schlabach
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. (Fall—day; spring—evening; summer 1963.)

115 *Editing and Make-up* (3) Schlabach
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. (Fall—day; summer 1963.)

121 *Advanced Reporting: Magazine Feature Articles* (3) Willson
Instruction and practice in writing magazine articles, material for which is obtained through independent investigation. (Fall—evening.)

133 *Advanced Reporting: Community News* (3) Gottlieb
Instruction and practice in coverage and writing of local news. (Fall—evening.)

137 *Advanced Reporting: National Affairs* (3) Schlabach
Instruction and practice in coverage and writing of federal government news from the point of view of the press association. (Spring—day.)

140 *Pictorial Journalism* (3) Smith
Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing technique, cropping for effective reproduction. (Spring—evening.)

142 *Retail Newspaper Advertising* (3)
Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods. (Not offered 1963–64.)

* The Staff of Instruction is for the academic year 1962–63.
† On leave of absence fall semester 1962–63.

143 *Industrial Communications* (3) Willson
An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications, and external house organs. (Spring—day.)

144 *Advanced Reporting: the Arts and Sciences* (3)
Instruction and practice in writing articles for publication in such fields as the arts, business and economics, science, and technology. (Not offered 1963–64.)

145 *Principles and Problems of Public Relations* (3) Hinkel
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—Saturday morning.)

151 *Editorial Writing* (3)
Instruction and practice in writing of editorials on public affairs. (Not offered 1963–64.)

196 *Seminar* (3) Schlabach
For Journalism majors only. Research in areas relating journalism to secondary fields of study. (Spring—as arranged.)

198 *Law of the Press* (3) Dennis
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—Saturday morning.)

COURSE OFFERED IN SIX-WEEK EDUCATION SESSION

190 *Supervising School Publications* (3) Willson
The role of journalism in society and the secondary school. Basic news writing, copy editing, make-up and law of the press. Editorial, business, and mechanical aspects of scholastic newspaper, magazine, and yearbook publication. (Summer 1963.)

LINGUISTICS—GRADUATE STUDY

COMMITTEE ON LINGUISTIC STUDY

J. C. Allee, Jr. *(Chairman)*, W. G. Clubb, P. F. Gallagher, J. C. King, G. E. McSpadden, N. D. Nelson

Columbian College offers an interdepartmental Master of Arts field in Linguistics, which is directed by the Department of Germanic Languages and Literatures and the Department of Romance Languages and Literatures. Interested students should consult the Chairman of the Committee on Linguistic Study and the Chairman of the department concerned.

For information concerning work toward the degree of Doctor of Philosophy, see the Graduate Council Catalogue.

There is no undergraduate major in the field of Linguistics.

The candidate's program will normally be selected from the following courses:

ENGLISH

125 *Introduction to English Linguistics* (3) — Allee
223–24 *Old English* (3–3) — Allee

GERMANIC LANGUAGES AND LITERATURES

201–2 *Middle High German* (3–3) — Legner
205–6 *Gothic* (3–3) — Legner
209–10 *Old High German* (3–3) — King
213–14 *Old Norse* (3–3) — Allee
223–24 *Linguistic Analysis of Modern German* (3–3) — King
225–26 *Seminar: Linguistics* (3–3) — King, Allee
227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) — King

MATHEMATICS

101 *Introduction to Mathematical Logic* (3) — Nelson
201–2 *Mathematical Logic* (3–3) — Nelson

PSYCHOLOGY

115 *Psychology of Language and Communication* (3) — Mosél

ROMANCE LANGUAGES AND LITERATURES

FRENCH

203 *Problems of Pronunciation and Intonation* (3–3) — Vignéras
212 *Historical French Grammar* (3) — Vignéras
213–14 *Old French* (3–3) — Vignéras

SPANISH

203 *Problems of Pronunciation and Intonation* (3) — McSpadden
212 *Historical Spanish Grammar* (3) — McSpadden
214 *Old Spanish* (3) — McSpadden

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) — McSpadden
279 *Introduction to Romance Philology and Linguistics* (3) — McSpadden

SOCIOLOGY AND ANTHROPOLOGY

ANTHROPOLOGY

161 *Language and Culture* (3) — Gallagher
193 *Anthropological Methods* (3) — Campbell

MATHEMATICS *

Professors F. E. Johnston, Florence Mears, N. D. Nelson *(Chairman)*, T. P. G. Liverman, N. A. Wiegmann
Professorial Lecturers W. H. Marlow, D. M. Dribin, Thomas Saaty
Associate Professorial Lecturers Joseph Blum, P. A. DeVore
Assistant Professors W. A. Smith, R. Z. Vause, Hewitt Kenyon
Lecturers Mabel Morris, A. J. Ziffer

Bachelor of Arts or *Bachelor of Science with a major in Mathematics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32. Required: in addition to the general requirements, pages 38–41, twenty-four semester hours of Mathematics of approved second- and third-group courses.

Master of Arts or *Master of Science in the field of Mathematics.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.
Required: the general requirements, pages 43–46.

Master of Arts in the field of Linguistics.—See pages 99–100 and the departments of Germanic Languages and Literatures and Romance Languages and Literatures.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in Mathematics.—Prerequisite: the Education curriculum, pages 33–34.
Required: the Mathematics option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP†

3 *College Algebra* (3)
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1963.)
The Staff

6 *Plane Trigonometry* (3)
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1963.)
The Staff

9 *General Mathematics I* (3)
For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1963.)
The Staff

10 *General Mathematics II* (3)
An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1963.)
The Staff

* The Staff of Instruction is for the academic year 1962–63.
† No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

15 *Finite Mathematics I* (3) — The Staff
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening.)

16 *Finite Mathematics II* (3) — The Staff
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening.)

21 *Calculus I* (3) — The Staff
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1963.)

22 *Calculus II* (3) — The Staff
Differentiation and integration of transcendental functions and applications, conics, parametric equations, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1963.)

23 *Calculus III* (3) — The Staff
Vector concepts, improper integrals, solid geometry, partial differentiation and applications. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1963.)

24 *Calculus IV* (3) — The Staff
Multiple integration with application, infinite series, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1963.)

27 *Calculus I and II* (6) — The Staff
The equivalent of Mathematics 21 and 22. (Fall—day.)

28 *Calculus III and IV* (6) — The Staff
The equivalent of Mathematics 23 and 24. (Spring—day.)

SECOND GROUP*

101 *Introduction to Mathematical Logic* (3) — Nelson
Development of propositional and predicate calculi, basic semantic concepts, elementary intuitive set theory, Boolean algebra. Prerequisite: Mathematics 24 or former 31, or Philosophy 121. (Fall—evening.)

102 *Fundamental Concepts of Mathematics* (3) — Nelson
Axiomatic set theory, cardinal and ordinal arithmetic, foundations of the real number system. Prerequisite: Mathematics 101 or permission of the instructor. (Not offered 1963–64.)

106 *Introduction to Topology* (3) — Kenyon
(Spring—evening.)

111 *Mathematics for Engineers and Physicists I* (3) — The Staff
Differential equations, vector analysis, introduction to matrix algebra. (Fall and spring—day and evening; summer 1963.)

112 *Mathematics for Engineers and Physicists II* (3) — The Staff
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or former 132. (Fall and spring—day and evening; summer 1963.)

120 *Introduction to Theory of Numbers* (3) — Vause
(Fall—evening.)

* Mathematics 24 or former 31 is prerequisite to all second-group courses.

122 *Introduction to Abstract Algebra* (3) The Staff
(Fall—day; spring—evening.)

124 *Introduction to Matrix Theory* (3) The Staff
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—evening; spring—day; summer 1963.)

126 *Advanced Analytic Geometry* (3)
(Not offered 1963–64.)

134 *Introduction to Boundary Value Problems* (3) The Staff
Prerequisite: Mathematics 111, or former 132, or 142. (Spring—evening.)

135 *Projective Geometry* (3) The Staff
(Fall—evening.)

139 *Advanced Calculus I* (3) The Staff
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. (Fall—evening; spring—day; summer 1963.)

140 *Advanced Calculus II* (3) The Staff
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139. (Spring—evening.)

141 *Introduction to Infinite Series* (3) Mears
(Not offered 1963–64.)

142 *Theory of Differential Equations* (3) The Staff
Prerequisite: Mathematics 139. (Fall—evening.)

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 111 or former 132. (Not offered 1963–64.)

171 *Vector Analysis* (3) The Staff
(Spring—evening.)

THIRD GROUP

201–2 *Mathematical Logic* (3–3) Nelson
(*First half:* fall—evening. *Second half:* not offered 1963–64.)

220 *Theory of Numbers* (3) Vause
(Spring—evening.)

237–38 *Theory of Functions of a Complex Variable* (3–3) Johnston
A year course: credit is not given for the first half until the second half is completed. (Academic year—evening.)

242 *Infinite Series* (3) Mears
(Not offered 1963–64.)

243–44 *Numerical Analysis* (3–3) Marlow
Prerequisite: Mathematics 111, former 132, or 142. (Academic year—evening.)

249 *Ordinary Differential Equations* (3)
(1964–65 and alternate years.)

250 *Integral Equations* (3)
(Not offered 1963–64.)

251–52 *Theory of Functions of a Real Variable* (3–3) Liverman
(1964–65 and alternate years.)

255 *Differential Geometry* (3) Dribin
(Summer 1963.)

256 *Introduction to Algebraic Geometry* (3) Dribin
(Spring—evening.)

257 *Theory of Groups* (3) Johnston
(Not offered 1963–64.)

261 *Generalized Functions and Operational Methods* (3) Liverman
Theory of generalized functions in one variable. Operational calculus of generalized functions. Applications to differential equations and Fourier analysis. Prerequisite: Mathematics 140. (1963–64 and alternate years: fall—evening.)

262 *Advanced Operational Methods* (3) Liverman
Generalized functions on test spaces of analytic functions. Operational calculus in several variables. Applications to partial differential and convolution equations of applied mathematics. Prerequisite: Mathematics 261. (1963–64 and alternate years: spring—evening.)

265–66 *Modern Algebra* (3–3) Wiegmann
Fundamental concepts of theory of groups, rings, and fields. Theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains, and groups with operators. (1964–65 and alternate years.)

267 *Topics in Matrix Theory* (3) Wiegmann
Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 124 and an elementary knowledge of groups, rings, and fields. (Spring—evening.)

268 *Calculus of Variations* (3)
(Not offered 1963–64.)

270 *Tensor Analysis* (3)
(Fall—evening.)

272 *Hilbert Space* (3)
(1964–65 and alternate years.)

277 *Partial Differential Equations* (3) Kenyon
(1964–65 and alternate years.)

281–82 *Topology* (3–3) The Staff
(1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

MICROBIOLOGY *

Professors A. M. Griffin, Mary Robbins, R. C. Parlett *(Chairman)*
Associate Professor Rudolph Hugh
Assistant Professors R. C. Wood, Elizabeth O'Hern, Lewis Affronti

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Special Lecturers L. S. Baron, R. C. Cook, F. B. Gordon, Leon Jacobs, M. C. Leikind, W. J. Peeples, G. O. Pierce

Master of Arts or *Master of Science in the field of Microbiology.*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Biology 1–2; Chemistry 11–12, 21, 22, 151–52; Physics 11, 12; Zoology 103–4.

Required: the general requirements, pages 43–46. The thirty semester hours must include (if not presented for admission) Microbiology 112, 249–50, 293–94, 299–300 and Biochemistry 221–22. The remaining courses are to be selected from Microbiology 209, 219–20, 225, 232, 234, and 295–96. The student with much bacteriological background may substitute for credit one or more courses from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoology. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

112 *General Microbiology* (4) Parlett and Staff

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $16. (Spring—MWF 9:10–12 am.)

209 *Medical Microbiology*† Parlett and Staff

For medical students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and disease of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. (Fall: lecture (4 hours), laboratory (10 hours)—as arranged.)

211 *Medical Bacteriology and Virology*† (7) Parlett, Robbins

A study of the fundamentals of bacteriology and virology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

213 *Parasitology*† (3) O'Hern

A study of the fundamentals of parasitology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $5. (Fall—as arranged.)

215 *Immunology*† (1) Parlett

A study of the fundamentals of immunology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

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* The Staff of Instruction is for the academic year 1962-63.

† The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

217 *Advanced Mycology* (3) O'Herr
Advanced study of the fungi—emphasizing culturing and determinative techniques. Lectures and laboratory exercises. Prerequisite: Microbiology 112 or 209, and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: fall—as arranged.)

219–20 *Advanced Microbiology* (arr.) Hugh and Staff
Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Microbiology 112 or 211, 213, and 215; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $16 a semester. (Academic year—as arranged.)

225 *Microbial Chemistry and Physiology* (3) Wood
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221–22 or the equivalent. A course in general microbiology is recommended. (1963–64 and alternate years: fall—as arranged.)

227 *Microbial Pharmacology* (2) Wood
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1964–65 and alternate years: spring—as arranged.)

230 *Statistics and Microbiology* (3) Griffin
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)

232 *Immunological Methods* (3) Parlett, Affronti
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1964–65 and alternate years: spring—as arranged.)

234 *Virology* (6) Robbins
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: spring—as arranged.)

249–50 *Introduction to Medical Research** (3–3) The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

293–94 *Staff Seminar* (1–1) The Staff
For graduate students. Bi-weekly throughout the year. (Academic year—as arranged.)

295–96 *Research in Microbiology* (arr.) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3)

* An interdepartmental course. The student should register in the department directing his research.

PATHOLOGY*

Professors T. M. Peery *(Chairman)*, W. R. Duryee *(Research)*
Clinical Professor D. L. Weiss
Associate Professors F. N. Miller, Jr., William Newman, W. L. Marsh, M. O. Skelton *(Visiting)*
Assistant Professors Lois Platt *(Cytology)*, Alexander Breslow, John Culberson
Assistants Gloria Brennan, Victor Fazekas, German Lasala, James Weaver

SPECIAL STAFF FOR DEMONSTRATIONS

Associate Clinical Professors J. S. Howe, E. F. Geever, R. G. Gottschalk
Assistant Clinical Professors R. E. Palmer, W. F. Enos, Cornelia Hoch-Ligeti, L. W. Fix, L. F. Misanik
Associates L. E. Zimmerman, C. B. Cook
Clinical Instructors D. R. Parkinson, I. D. Godwin

Special Lecturers E. B. Helwig, L. C. Johnson

Bachelor of Science in Medical Technology.—Prerequisite: the Science curriculum, page 32, including Biology 1–2†, Chemistry 11–12, and Microbiology 112. Required: the general requirements, pages 38–41, including Chemistry 21 and 22, and the following second-group courses offered in the University Hospital: Pathology 115–16, 117–18, and 119–20.

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

115–16 *Introduction to Medical Science* (1–1) Marsh and Staff
For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)

117–18 *Principles in Medical Technology* (4–4) Marsh and Staff
For students in medical technology at the University Hospital. Theories, principles, and sources of error, of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)

119–20 *Medical Technology Laboratory* (10–10) Marsh and Staff
Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

281 *Problems in Experimental Cellular Pathology* (1) Duryee
For nonmedical graduate students. Also for a limited number of specially qualified medical students on an elective basis. Cytological and biophysical aspects of cellular function in relation to normal and selected pathological conditions. (Fall—1 hour a week as arranged.)

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* The Staff of Instruction is for the academic year 1962–63.
† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

*PHARMACOLOGY**

Professor H. G. Mandel *(Chairman)*
Clinical Professor R. G. Smith
Professorial Lecturer B. B. Brodie
Associate Professor Clarke Davison
Assistant Professors V. H. Cohn, Jr., T. M. Farber, Paul Mazel, Melvin Reich *(Research)*, J. F. Henderson *(Research)*, Elizabeth Tidball *(Research)*, W. P. Weiss *(Research)*

Master of Arts or *Master of Science in the field of Pharmacology.*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively. The undergraduate program must include the following courses or the equivalent: Biology 1–2†; Physics 12, 13, 16; Chemistry 11–12, 22, 151–52. One year of calculus and a course in physical chemistry should be included, but these courses may be taken during the work towards the Master's degree. Biochemistry 221–22 and Physiology 137 are recommended as the undergraduate electives if the candidate wishes to complete the work for the Master's degree in one year.

Required: the general requirements, pages 43–46, including Biochemistry 221–22; Physiology 137 or 232; Pharmacology 261, 267–68, 269–70, 299–300. The remaining courses may be selected from Biochemistry 224, 241; Physiology 170, 232, 259; Microbiology 112, 211, 213, 215, 219–20, 225, 227, 230, 234; Pharmacology 249–50, 272, 279–80, 281, 283.

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

249–50 *Introduction to Medical Research*‡ (3–3) Reich and Staff
Primarly for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

261 *Pharmacology* (7) Mandel and Staff
Lectures, laboratories, and recitations concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)

267–68 *Pharmacological Research* (3–3) The Staff
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)

269–70 *Pharmacology Seminar* (1–1) Cohn and Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)

272 *Physiological Disposition of Drugs* (3) Cohn, Davison
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1963–64 and alternate years: spring—as arranged.)

279–80 *Special Topics in Pharmacology* (arr.) The Staff
A lecture course dealing with select aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)

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* The Staff of Instruction is for the academic year 1962–63.

† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

‡ This is an interdepartmental course. The student should register in the department directing his research.

281 *Physiological Techniques in Pharmacology* (3) Farber, Mazel, Tidball
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and site of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1963–64 and alternate years: fall—as arranged.)

283 *Biochemical Techniques in Pharmacology* (3) Cohn, Henderson
A lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Prerequisite or concurrent registration: Pharmacology 261. (1964–65 and alternate years: fall—as arranged.)

299–300 *Thesis* (3–3) The Staff
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

PHILOSOPHY *

Professor C. E. Gauss *(Chairman)*
Associate Professor R. H. Schlagel†
Associate Professorial Lecturer C. H. Pfuntner

Bachelor of Arts with a major in Philosophy (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 31.

Required: in addition to the general requirements, pages 38–41, the grade of "pass" for the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is schematized under the following two general headings: (1) methodology and theory of knowledge and (2) the history of ideas and social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199–200) intended to assist the student in preparing for the major examination.

Master of Arts in the field of Philosophy.—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this University's major examination in Philosophy; the following specific courses or the equivalent: Philosophy 111–12, 113, 121–22, and 131.

Required: the general requirements, pages 43–46. As much as possible of the required course work must be in third-group courses. Where second group courses are elected students will be required to do more intensive and extensive work than undergraduates. A general written examination in two areas of Philosophy and an oral examination in the student's special field will be required in addition to a Master's thesis of substantial length.

FIRST GROUP

51–52 *Introduction to Philosophy* (3–3) The Staff
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1963—Philosophy 51 (3).)

* The Staff of Instruction is for the academic year 1962–63.
† On sabbatical leave 1962–63.

SECOND GROUP

111–12 *History of Philosophy* (3–3) Pfuntner
The history of western philosophy from early Greece to Kant, seen as the development and modification of the Hellenic cultural pattern. (Academic year—day; summer 1963—Philosophy 111 (3).)

113 *History of Nineteenth and Twentieth Century Philosophy* (3) Pfuntner
European philosophy from the time of Kant. "Isms" and ideologies at the root of contemporary thought. (Fall—evening.)

121–22 *Logic and Scientific Method* (3–3) Pfuntner
First half: the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability. (Academic year—evening; summer 1963—Philosophy 121 (3).)

131 *Ethics* (3) Schlagel
A critical examination of traditional ethical theories from Plato to Ayer. Consideration of the theoretical problems of ethics: the meaning of "good", the nature of ethical judgment, the justification of ethical standards. The course aims at enabling the student to develop his own ethical view as a consequence of his greater understanding of moral phenomena. (Fall—day.)

142 *Philosophies Men Live by* (3) Schlagel
Critique of the tenets, methodologies, and presuppositions of current, vital philosophical orientations: Existentialism, Positivism, Pragmatic Naturalism, Theism, Linguistic Analysis. A critique of reason and faith, and the nonrational aspects of man as guiding influences in life. (Spring—day).

151 *The Philosophy of Science* (3) Schlagel
Brief history of modern science; problems of the meaning of causality, the justification of induction, theories of probability; the nature of scientific explanation and the status of inferred entities; the nature of a mathematical system. Consideration of the philosophic import of certain scientific theories such as Einstein's theory of relativity, Heisenberg's principle of indeterminacy, and Bohr's principle of complementarity. (Fall—day.)

152 *Epistemology* (3) Schlagel
The meaning and criteria of truth; the meaning and cognitive significance of common sense, scientific, and religious propositions or beliefs. Study of problems related to perception, verification, universals, *a priori* and *a posteriori* knowledge, the concept of mind. (Spring—day.)

162 *Aesthetics* (3) Gauss
The nature of aesthetic experience, problems of appreciation and judgment in the arts, and of the theories and process of artistic creation. Emphasis on contemporary arts and criticism. (Spring—day.)

172 *American Philosophy* (3) Pfuntner
The philosophies of Peirce, Royce, James, Dewey, and Santayana as representative of American thought. (Spring—evening.)

180 *Philosophy of History* (3) Gauss
Problems of historical knowledge and explanation. Critique of philosophies of history. (Not offered 1963–64.)

193 *Topics in Contemporary Philosophy* (3) The Staff
Intensive study of one selected topic: topic for 1963–64: philosophy in contemporary literature. (Fall—day.)

199–200 *Proseminar: Readings for the Major* (3–3)
Conferences and group discussions in preparation for field of study major examination. (Academic year—as arranged.)

THIRD GROUP

201–2 *Readings and Research* (3–3) The Staff
Advanced readings and reports. Investigation of special problems. (Academic year—as arranged.)

211 *Seminar in Plato* (3) Gauss
Intensive study of Plato's later dialogues. (Not offered 1963–64.)

212 *Seminar in Aristotle* (3) Schlagel
Aristotle's logic, metaphysics, and philosophy of science. The development of Naturalism. (Spring—evening.)

216 *Seminar in Kant* (3) Schlagel
A study of one of Kant's Critiques. (Not offered 1963–64.)

262 *Seminar in Aesthetics* (3) Gauss
Intensive study in selected problems. (Fall—evening.)

299–300 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)

Mathematics 101, *Introduction to Mathematical Logic* (3)

PHYSICS *

Professors G. M. Koehl, Herbert Jehle
Associate Professors H. H. Hobbs *(Chairman)*, Otto Bergmann
Associate Professorial Lecturers H. H. Landon, Jr., Herbert Rabin
Assistant Professors S. S. Yeandle, Jr., Margaret Montzka, S. P. Bjorklund
Lecturers J. N. Tevis, DeWitt Fisher, J. M. Harrison, K. F. Oerlein, W. J. Condell, Jr., J. E. Tompkins
Instructor R. M. Shirven

Bachelor of Arts or *Bachelor of Science with a major in Physics (Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Physics 11, 12, 13, 16; or 11, 14, 15, 16; Chemistry 21; Mathematics 21, 22, 23, and 24 (or former 29, 30, and 31).
Required, both for the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements, pages 38–41, including Mathematics 112 and Physics 101, 105, 106, 113, 102 or 114, and 153, 155, or 156, plus *one* of the following: Physics 118, 123, and 132.

Master of Arts or *Master of Science in the field of Physics.*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Physics at this University, or the equivalent.
Required: the general requirements, pages 43–46, including Mathematics 171 (if not taken earlier) and Physics 201, 202, 219, 255 or 256, and 291–92.

Doctor of Philosophy—See the Graduate Council Catalogue.

* The Staff of Instruction is for the academic year 1962–63.

Bachelor of Arts in Education with a teaching field in Physics.—Prerequisite: the Education curriculum, pages 33–34.

Required: the physics option and the professional courses listed in the School of Education Catalogue.

FIRST GROUP

For a one-year course offering an introduction to the methods and achievements of physical science, see Chemistry 3–4, page 69.

11 *Introductory Physics* (3) Koehl and Staff

Lecture (1 hour), recitation (1 hour), laboratory (2½ hours.) An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. (Fall and spring—day and evening; summer 1963.)

12 *Introductory Physics* (3) Koehl and Staff

Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Material fee, $11. (Spring—day and evening; summer 1963.)

13 *Introductory Physics* (3) Harrison and Staff

Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Elementary electricity and magnetism. Prerequisite: Physics 11. Material fee, $11. (Fall—day and evening; summer 1963.)

14 *General Physics* (3) Yeandle and Staff

Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11, Mathematics 21 (or former 29). Material fee, $11. (Spring—day and evening.)

15 *General Physics* (3) Bjorklund and Staff

Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Electricity and magnetism. Prerequisite: Physics 14, Mathematics 22 (or former 30). Material fee, $11. (Fall—day and evening.)

16 *General Physics* (3) Hobbs

Lecture (2 hours), conference (1 hour). Modern physics, structure of the atom. Prerequisite: Physics 13 or 15, Mathematics 22 (or former 30) and consent of the instructor. (Spring—day and evening.)

SECOND GROUP

101 *Mechanics* (3) Jehle

Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 12 or 14, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—day; 1964–65 and alternate years: fall—evening.)

102 *Heat and Thermodynamics* (3) Yeandle

Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

105 *Principles of Electricity* (3)

Elementary d-c and a-c circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.) Koehl

106 *Optics* (3)

Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day.)

113 *Atomic Physics* (3) Bergmann
Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 16, 101 or 105, or the equivalent, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

114 *Statistical Physics* (3) Jehle
Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 16, Mathematics 24 (or former 31), permission of the instructor. (Spring—evening.)

116 *Quantum and Solid State Physics* (3) Hobbs
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111. (Spring—day and evening.)

118 *Introduction to Solid State Physics* (3) Rabin
Dielectric and magnetic properties of solids, electron theory of metals, semi-conductors, dislocations, and plastic flow. Prerequisite: Physics 113. (Spring—evening.)

123 *Nuclear Physics* (3) The Staff
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. Prerequisite: Physics 113. (Spring—evening.)

128 *Sound* (3)
Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Not offered 1963–64.)

132 *Electronics* (3)
Lecture (2 hours), laboratory (3 hours). The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 16 and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11. (Not offered 1963–64.)

153 *Advanced Laboratory in Atomic Physics* (3) Hobbs
Prerequisite: Physics 16. Material fee, $11. (Spring: Saturday—as arranged.)

155 *Advanced Laboratory in Electricity and Magnetism* (3)
Prerequisite: Physics 105. Material fee, $11. (Not offered 1963–64.)

156 *Advanced Laboratory in Optics* (3) Hobbs
Prerequisite: Physics 106. Material fee, $11. (Not offered 1963–64.)

181 *Biophysics* (3) Yeandle
Molecular basis of biophysics, biosynthesis, and reproduction. Molecular and genetic aspects of the effects of radiation. Physiochemical equilibria, steady states, and transients in biological systems; order, disorder, and information theory. Admission by permission of the instructor. (Spring—evening.)

191 *Nuclear Reactors* (3) Landon
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

THIRD GROUP

201 *Classical Physical Theory* (3) Bjorklund
Classical nonrelativistic and relativistic field theories. Prerequisite: Physics 101 and 105; Mathematics 132, 171. (Mathematics 171 may be taken concurrently.) (Fall—evening.)

202 *Classical Physical Theory* (3) Bjorklund
Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 112 or 132, 171. (Spring—evening.)

203–4 *Principles of Modern Physics* (3–3) Bergmann
A critical survey of fundamental topics of modern physics including the theory of relativity, thermal radiation and quantum theory, atomic structure and spectra, wave mechanics, interactions present in multielectron atoms, X-ray, the nucleus, properties of matter in bulk. (Academic year—evening.)

218 *Solid State Physics* (3) Hobbs
Tensor properties of crystals. Application of quantum mechanics to problems in solid state physics. (Spring—evening.)

219–20 *Quantum Mechanics* (3–3) Jehle
Criticism of classical ideas of mechanics and a formulation of quantum mechanical equations; matrix mechanics and its relation to quantum mechanics; application to various problems of atomic, molecular, and nuclear physics. Prerequisite: Physics 113, 201, 202. (Academic year—evening.)

221 *Quantum Electrodynamics and Field Theories* (3) Jehle
Variation principles. Relativistic wave equations, quantization of fields, interaction between fields. Scattering theory. S matrix and causality. Prerequisite: Physics 219–20. (1964–65 and alternate years.)

222 *Elementary Particles* (3) Jehle
Scalar, vector, spinor fields, and elementary particles. Symmetry properties and associated conservation laws. Space inversion and parity, time reflection, charge conjugation. Prerequisite: Physics 219–20. (1963–64 and alternate years; spring—evening.)

227 *Irreversible Processes* (3) Yeandle
Extension of thermodynamic concepts to irreversible processes. Discussion of thermodynamic forces and fluxes, and the Onsager reciprocal relations. Review of the statistical mechanical reasons for assuming the postulate of irreversible thermodynamics. Prerequisite: Physics 102, 114; Mathematics 132 or 112. (Spring—evening.)

255–56 *Graduate Laboratory* (4–4) Hobbs
Individual work on special topics. One semester of this course is required of all Master's candidates in physics. Students electing this course may begin with Physics 255 or 256. Not open to undergraduates. Material fee, $11 a semester. (*First half:* fall—day. *Second half:* not offered 1963–64.)

291–92 *Seminar: Recent Developments in Physics* (1–1) The Staff
Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence. (Academic year: alternate weeks—Monday evening.) The Staff

299–300 *Thesis* (3–3)
Fees to be arranged. (Academic year—as arranged.)

PHYSIOLOGY *

Professors C. E. Leese, E. M. Renkin *(Chairman)*
Associate Professor F. P. J. Diecke
Assistant Professors Ruth Henderson, C. S. Tidball *(Research)*, Margret Westecker
Lecturers Eugene Braunwald, J. F. Hoffman, D. P. Rall, R. J. Podolsky

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Special Lecturers S. J. Sarnoff, J. H. U. Brown

Master of Arts or *Master of Science in the field of Physiology.*—Undergraduate work should include chemistry and physics. It should be supplemented by further courses in mathematics and science such as calculus, physical and organic chemistry.
Required: the general requirements, pages 43–46. In addition to the thesis, the thirty hours of required work should include Physiology 221 or 222, 232, and at least three semester hours of research (Physiology 295 or 296).

Doctor of Philosophy (Graduate Council).—See the Graduate Council Catalogue.

115 *Introduction to Human Physiology* (3) Leese
Lectures on the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of biological science. (1963–64 and alternate years: fall—TTh 5:10–6:25 pm.; 1964–65 and alternate years: fall—TTh 8:45–10 am.)

130 *Psycho-Physiology* (2) Leese
Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. (Spring—TTh 5:10 pm.)

137 *Vertebrate Physiology* (4) Tidball and Staff
Fundamental principles of physiology as exemplified in the vertebrates. Prerequisite: Chemistry 11–12; Mathematics 3; and Physics 11, 12; or the equivalent. Laboratory fee, $18. (Fall—lecture, MWF 11:10–12 am.; laboratory, F 1:10–5 pm.)

170 *General Physiology* (3) Westecker
Lectures on basic topics in the physiology of cells and tissues. Prerequisite: Physiology 137 or 150, or Botany 135; and the consent of the Instructor. (Spring—T 11:10–12 am., Th 10:10–12 am.)

211–12 *Problems in Physiology* (arr.) Renkin and Staff
Directed study under the supervision of a staff member. Prerequisite: Physiology 137, 150, or 232, and the consent of the instructor. (Academic year—as arranged.)

221–22 *Physiology Seminar* (1–1) Henderson and Staff
Prerequisite: Physiology 137, 150, or 232, and a reading knowledge of French or German. (Academic year—as arranged.)

232 *Advanced Mammalian Physiology* (10) Diecke and Staff
Lecture 7 hours a week, laboratory 9 hours a week. Prerequisite: Chemistry 11–12; Mathematics 3; Physics 11, 12; or the equivalent. It is recommended that Biochemistry 221–22 be taken as a prerequisite or concurrently. (Spring—MWF 1–5 pm.; TTh 1–3 pm.)

239 *Comparative Physiology* (2) Diecke
Lectures and seminars on topics of current interest in comparative physiology, with emphasis on nonmammalian forms. Prerequisite: Physiology 137, 150, 170, or 232, or Zoology 162; and the consent of the instructor. (1964–65 and every third year: fall —as arranged.)

* The Staff of Instruction is for the academic year 1962–63.

265 *Physiology of Cell Membranes* (2) Renkin
Lectures and seminars on ionic and molecular transport through biological membranes. Prerequisite: Chemistry 111–12 or Physics 181; *and* Physiology 150, 170, or 232, or Botany 135–36; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

281 *Biophysics* (2) The Staff
Lectures and seminars on biological topics which require development along physical lines. Prerequisite: Chemistry 111–12 or Physics 181 and the consent of the instructor. (1963–64 and every third year: fall—as arranged.)

295–96 *Research* (arr.) The Staff
Prerequisite: Physiology 137 and 170; 150 or 232; or the equivalent. (Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

*POLITICAL SCIENCE**

Professors W. R. West *(Emeritus)*, J. W. Brewer *(Chairman)*, W. H. Kraus, K. L. London
Professorial Lecturer F. M. Riddick
Associate Professors H. L. LeBlanc, Benjamin Nimer, H. R. Ludden
Assistant Professors P. W. Conner, Kenneth McDonald
Associate Professorial Lecturer H. M. Bain, Jr.
Lecturer C. H. Slayman, Jr.

Bachelor of Arts with a major in Political Science (Departmental).—Prerequisite: the Arts and Letters urriculum, page 31, including Political Science 9–10.

Required: in addition to the general requirements, pages 38–41, thirty semester hours from the following groups distributed as follows: twelve hours from Group A; six hours from group B; six hours from Group C; and six additional hours from any group or groups. The student will normally complete all six hours of any full-year course which he selects.

Group A: Political Science 111, 112, 117–18, 121–22. Group B: Political Science 171, 172, 181–82. Group C: Political Science 104, 125, 145, 146, 151–52. Group D: 105, 107, 113, 119, 120, 141, 157–58, 177–78, 187–88, 191–92, 194.

Undergraduate students interested in preparing for graduate work in Public Administration will consult the Chairman of the Department of Political Science for modifications of the above requirements.

Bachelor of Arts with a major in Latin American Civilization (Field-of-Study).—See the Department of History.

Master of Arts in the field of Political Science.—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University (or the equivalent major elsewhere) with a *B* average (or better) in the major.

Required: the general requirements, pages 43–46. The thirty hours of required work must be approved in advance by the Adviser.

Master of Arts in the field of Latin American Civilization.—See the Department of History.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts and *Master of Arts in Government in the fields of International Affairs*

* The Staff of Instruction is for the academic year 1962–63.

and Public Affairs.—See the School of Government, Business, and International Affairs Catalogue.

FIRST GROUP

1 *Introduction to Government** (3) The Staff

Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day; summer 1963.)

9–10 *Government of the United States** (3–3) The Staff

First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening.)

SECOND GROUP*

104 *State and Local Governments* (3) LeBlanc

State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—evening.)

105 *The Governmental Process of the District of Columbia* (3) LeBlanc

Legal structure and political problems of the District of Columbia including restrictions on home rule, Congressional relations, and group politics. (Not offered 1963–64.)

107 *Problems in Modern Political Thought* (3) Kraus

Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Summer 1963.)

111 *Introduction to Comparative Government and Politics* (3) Kraus

Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening; summer 1963.)

112 *Introduction to Comparative Government and Politics* (3) Kraus

Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)

113 *Political Problems of the British Commonwealth of Nations* (3) Kraus

From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Not offered 1963–64.)

117–18 *Political Theory: the Nature and Growth of Political Thought in the West* (3–3) Kraus

First half: from Classical Antiquity to the Middle Ages; the forging of the western political tradition. *Second half:* from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

119–20 *Foundations of American Democracy* (3–3) Conner

Introduction to political thought in the United States from colonial times to the present. (Academic year—evening.)

121–22 *The Constitution of the United States* (3–3) West

Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights. (Academic year—day and evening; summer 1963—Political Science 121 (3).)

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

125 *Legislative Organizations* (3) Riddick
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1963–64 and alternate years: fall—evening.)

141 *The Development of Legal Institutions* (3) Brewer
Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)

145 *Political Parties and Politics* (3) LeBlanc
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day; summer 1963.)

146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)

151–52 *Public Administration* (3–3) LeBlanc
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

157–58 *Current Problems in Domestic Politics* (1–1) Slayman
Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)

166 *Field Work in Government* (3) LeBlanc
Practical training in the operation of the Federal Government, based on experience through assignment to selected government offices. Students will have an opportunity to observe and participate in government in the Washington area. Open only to students in the Public Affairs curriculum, School of Government, Business, and International Affairs. (Fall and spring—as arranged.)

171 *International Politics* (3) Ludden, Nimer
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1963.)

172 *International Organization: the United Nations* (3) Ludden
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening; summer 1963.)

177 *Recent Trends in Latin American Politics and Government* (3) Davis
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. (Fall—evening; summer 1963.)

178 *International Politics in the Western Hemisphere* (3) Davis
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)

181–82 *International Law* (3–3) Brewer
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1963—Political Science 181 (3).)

187–88 *Current Problems in International Politics* (1–1) Slayman
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)

191 *Politics of the Middle East* (3) Nimer
Domestic and international politics of Turkey, Iran, Israel, and the Eastern Arab States and Principalities. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening.)

192 *Politics of North and Central Africa* (3) Nimer
Domestic and international politics of the Western Arab States, Ethiopia, Somalia, Liberia, and the newly independent states of former British, French, and Belgian Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Spring—evening.)

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region. (Spring—evening.)

197 *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3) Nimer
Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—evening; spring—day.)

THIRD GROUP

209–10 *Seminar: the Federal Government of the United States* (3–3) West
Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the presidency; and presidential policy leadership and control. (Academic year—evening.)

212 *Seminar: Comparative Government and Politics* (3) Kraus
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—evening.)

213 *Readings in Comparative Government and Politics* (3) Kraus
Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—evening; summer 1963.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Fall—evening.)

220 *Reading Course in Political Theory* (3) Kraus
Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Spring—evening.)

221–22 *Seminar: United States Constitution and the Judicial Function* (3–3) Conner
A study of constitutional interpretation as an aspect of the political process. (Academic year—evening.)

230 *Metropolitan Problems* (3) Bain
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.)

245–46 *The American Political Process: Political Parties and Interest Groups* (3–3) LeBlanc

First half: readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.)

271–72 *Problems in International Politics and Organization* (3–3) Ludden

A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations. (Academic year—evening.)

273 *Public Opinion and Foreign Policy* (3) Ludden

Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—day.)

274 *Methods and Objectives of Foreign Policy* (3)

Examination of the objectives of foriegn policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives. (Spring—evening.)

277 *Seminar: Latin American Government* (3) Davis

Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.)

278 *Seminar: Latin American Political Philosophy* (3) Davis

Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)

279 *Reading Course in International Affairs* (3)

Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. (Fall—evening; summer 1963.)

281–82 *Seminar: International Law and Relations* (3–3) Brewer

Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (*First half:* summer 1963. *Second half:* spring—evening.)

292 *International Politics and Government in the Middle East* (3) Nimer

Research and analysis of the international relations and major political problems of the Arab world and adjacent areas. (Spring—evening.)

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3)

Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East. (Academic year—evening.) The Staff

299–300 *Thesis* (3–3)

(Academic year—as arranged; summer 1963.)

INSTITUTE FOR SINO-SOVIET STUDIES

In addition to the regular courses announced above, the University offered the following Political Science courses in the 1962–63 spring semester for the Institute for Sino-Soviet Studies. For announcement of courses to be offered in the 1963–64 academic year see the Schedule of Classes.

215 *Seminar: the Sino-Soviet Bloc in World Affairs II* (3) London

Examination of the political ramifications of the international Communist movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America.

230 *Seminar: Operational Techniques of International Communism* (3) Metzl

Strategy and tactics of the international Communist movement in the post-Stalin period, with emphasis on the *modus operandi* of Communist parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements.

270 *Seminar: Problems of Soviet Political Strategy—Case Studies* (3) Garthoff

Analysis of a selected major Soviet foreign political problem, undertaken partly by each student individually and partly by the seminar, to clarify the various international political, military-political, economic, propaganda, and other factors which enter into Soviet policy-making. Assignment of individual problems will be based on the particular interests and background of each student.

288 *Seminar: Communist Military Policy and Strategy* (3) Wolfe

Soviet developments in the area of military policy and strategy, with some attention to questions of intra-Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought.

296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3) Hinton

The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian Communist states; local Communist parties since World War II; Sino-Soviet rivalry.

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers political science courses listed below for students in the following special programs: Air Force Advanced Management Program, Army War College Program, National War College Program.

260 *Fundamentals of National Power** (3) The Staff

261 *International and United States Foreign Policy** (3) The Staff

262 *National Security Policy of the United States** (3) The Staff

263 *Topics in International Law* (3) Brewer

A consideration of theory, problems, and cases in the public law of nations, including the law of peace and the law of war.

265 *Diplomacy Since World War II* (3) Jordan

Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

267 *American Military Policy* (3) Eitler

Examination of the nature of military policy and its relation to domestic and foreign policy, the historical element, organization within the military establishment for policy making.

267 *Readings in International Affairs** (1 to 2) Ludden

Directed individual readings in core-curriculum subjects of the war college programs.

* Limited to students in the Master of Arts in International Affairs programs at the Army War College, National War College, Air War College, and Navy War College.

*PSYCHOLOGY**

Professors Thelma Hunt *(Chairman)*, J. L. Finan, E. L. Phillips
Professorial Lecturers H. F. Hubbard, Margaret Ives
Associate Professors C. E. Tuthill, W. E. Caldwell, J. N. Mosél, R. D. Walk, Eva Johnson, C. W. Hill, Virginia Kirkbride, L. E. Schlesinger *(Research)*
Associate Professorial Lecturers J. G. Colmen, C. J. Lindley
Assistant Professors R. E. Nolan, Lila Ghent *(Research)*, Jacqueline Goodnow *(Research)*, R. R. Bonato *(Research)*, R. C. Petersen *(Research)*
Associate Janet Johnson

Bachelor of Arts with a major in Psychology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, nine semester hours in first-group courses in Psychology, including Psychology 5–6.

The general requirements for the degree are stated on pages 38–41. The sixty required semester hours must include twenty-four hours in Psychology in addition to those taken as prerequisites, including Psychology 101, 118, 131, 151, and 196; and Statistics 53 or 104.

Master of Arts or *Master of Science in the field of Psychology.*—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements, pages 43–46. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in Psychology including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) counseling, (3) clinical, (4) social, (5) personnel, (6) experimental, (7) personality, and (8) experimental comparative. For detailed requirements consult the Chairman of the Department.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Master of Arts in Government or *Master of Business Administration in the field of Personnel Administration.* See the School of Government, Business, and International Affairs Catalogue.

Master of Arts in Education in the fields of Employee Training and of Guidance.—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. See the School of Education Catalogue.

FIRST GROUP

1 *General Psychology*† (3) The Staff
The fundamental principles underlying human behavior. (Fall and spring—day and evening; summer 1963.)

5–6 *Principles and Methods of Psychology*† (3–3) Walk and Staff
Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Required of all psychology majors, who should take the course early in the major. May be taken without Psychology 1. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)

* The Staff of Instruction is for the academic year 1962–63.
† Psychology 1 or 5–6 is prerequisite to all other courses in Psychology.

8 *Psychology of Adjustment* (3) The Staff
(Formerly Psychology 4)
Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1963 (offered as Psychology 4).)

22 *Introduction to Educational Psychology* (3) J. Johnson
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day.)

29 *Child Psychology* (3) E. Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1963.)

SECOND GROUP*

101 *Abnormal Psychology* (3) Nolan, Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1963.)

112 *Adolescent Psychology* (3) E. Johnson
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day.)

115 *Psychology of Language and Communication* (3) Mosél
An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day.)

118 *Physiological Psychology* (3) Finan, Hill
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior. (Fall—evening; spring—day; summer 1963.)

121 *Educational Psychology* (3)
Advanced course in educational psychology. Designed for those with background in education and psychology. (Fall and spring—evening; summer 1963.)

129 *Introduction to Counseling* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. (Fall—evening; summer 1963.)

131 *Psychological Tests* (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. (Fall—evening; spring—day; summer 1963.)

144 *Personnel Psychology* (3) Mosél
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.)

146 *Psychology of Advertising and Consumer Behavior* (3)
The motivational and social processes in economic behavior. Consideration of current techniques and findings in motivational research. Evaluation of the effectiveness of mass media, public relations programs, and strategies of persuasion. (Fall—evening.)

* Six credits in first-group courses are prerequisite to all second-group courses.

151 *Social Psychology* (3) Tuthill
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war. (Fall—evening; spring—day; summer 1963.)

156 *Psychology of Propaganda and Public Opinion* (3) Tuthill
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (Spring—evening; summer 1963.)

161 *Comparative Psychology* (3) Caldwell
A lecture course in animal psychology. Covers psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation and research in psychology. (Spring—day.)

162 *Experimental Comparative Psychology* (3) Caldwell
Opportunity for individual psychological experimentation using lower animals as subjects. Offered on independent study plan. Prerequisite: Psychology 161 and permission of the instructor. (Fall and spring—as arranged.)

192 *Problems in Experimental Psychology* (3) Hill, Walk
Opportunity for work on individual experimental projects. Prerequisite: Psychology 5-6 and permission of the instructor. (Fall and spring—as arranged.)

193-94 *Readings in Psychology* (3-3) The Staff
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality-point index of 3.00 or higher. Admission by special permission of the instructor. (Academic year—as arranged; summer 1963.)

196 *History and Systems of Psychology* (3) Caldwell
A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology. (Fall—day; spring—evening; summer 1963.)

198 *Current Research Issues in Psychology* (3) Walk
Class will be conducted as a seminar and will consider recent experiments in Psychology, including those performed by undergraduates. Emphasis is on student participation. Open only to senior psychology majors. (Spring—day.)

THIRD GROUP*

201 *Advanced General Psychology* (3) Hill
An integrated review of history, theory, and facts in the area of general psychology: perception, motivation, learning, and cognition. Required of all psychology Master's candidates. (Fall—day; spring—evening; summer 1963.)

202 *Psychological Research Methods and Procedures* (3) Walk
Required in all graduate programs. Prerequisites: Experimental Psychology and an elementary course in statistics. (Fall—evening; spring—day; summer 1963.)

207-8 *Readings in Psychology for Graduate Students* (3-3) The Staff
Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings. (Academic year—as arranged; summer 1963.)

209 *Seminar: Psychology of Motivation* (3) Caldwell
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. (Fall—evening.)

212 *Personality Evaluation by Projective Techniques* (3) Nolan, Ives
Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 233. (Fall—day; spring—evening.)

* Open only to graduate students, except by special permission of Instructor and Chairman of the Department.

213 *Clinical Psychometrics* (3) Ives
A study of the clinical applications of nonprojective tests. Prerequisite: Psychology 233. (Spring—evening.)

215 *Advanced Study of Projective Techniques* (3) Nolan, Ives
Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212. (Fall—evening; spring—day.)

217 *Seminar: Developmental Psychology* (3) Ghent
(Spring—day.)

218 *Seminar: Clinical Psychology—Psychopathology* (3) Nolan
Covers basic etiological factors in behavioral and psychological deviations and disorders. (Fall—day.)

219 *Seminar: Clinical Psychology—Psychotherapy* (3) Nolan
Covers theoretical principles underlying psychotherapy, techniques and procedures, and problems of evaluation. (Spring—evening; summer 1963.)

220 *Seminar: Abnormal Psychology* (3) Hunt
An intensive study of selected problems in the field of abnormal psychology. (Fall—day; spring—evening.)

223 *Seminar: Learning* (3) Finan
Covers research and theory in the psychology of learning. (Fall—evening.)

225 *Seminar: Mental Hygiene* (3) Phillips
A study of mental health problems with special attention to needs of counselors, teachers, and others working with children and adolescents. (Fall—evening; spring—day.)

226 *Seminar: Clinical Psychology of Childhood and Adolescence* (3) E. Johnson
A survey of behavior and personality disorders. (Spring—evening.)

231 *Test Construction* (3) Mosél
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics. (Fall—evening.)

233 *Individual Psychological Testing* (3) E. Johnson
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7. (Fall and spring—day.)

234 *Seminar: Test Theory* (3) Mosél
Development of the axiomatic-deductive theory underlying the major notions in the construction, evaluation, and application of psychological tests. (1964–65 and alternate years.)

235 *Seminar: Psychological Measurement* (3) Hunt
Advanced instruction in the use and interpretation of psychological tests, with emphasis upon group tests; survey of recent research in psychological measurement. Prerequisite: a course in psychological or educational measurement. (Spring—evening.)

244 *Seminar: Job Analysis and Evaluation* (3) Mosél
(Summer 1963.)

245 *Seminar: Employee Motivation and Morale* (3) Mosél
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design. (Spring—evening.)

246 *Seminar: Personnel Measurement Techniques* (3) Mosél
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (Fall—evening.)

249 *Seminar: Systems Development and Human Engineering* (3) Finan
Application of findings and methods of experimental psychology to design and operation of equipment and man-machine systems. Relation of capacities of the operator to information display systems, control mechanisms, work environment, and work methods. (Fall—evening.)

251 *Seminar: Advanced Social Psychology* (3) Tuthill
Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory. (Fall—evening.)

254 *Seminar: Group Dynamics* (3) Tuthill
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes. (1963–64 and alternate years: spring—evening.)

255 *Seminar: Techniques of Opinion and Attitude Measurements* (3) Tuthill
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc. (1964–65 and alternate years.)

258 *Applied Social Psychology* (3) Mosél
The development of personality, personality adjustment, nature of communication and interaction; structure and functioning of groups, group dynamics, opinion and attitude formation, and opinion and attitude measurement. Classroom activity supplemented by practical observations and projects. Open only to graduate students in hospital administration, engineering administration, and other graduate administrative programs. (Spring—day and evening.)

261 *Seminar: International Communication* (3) Mosél
The communication process, problems in mass communication, measuring and modifying opinions and attitudes, principles of persuasion, psychological warfare. (1963–64 and alternate years: spring—evening.)

262 *Dynamics of Social Change* (3) Lippitt
Current research and theory related to the process of social change. Basic principles of planned change will be explored in connection with individual, group, organization, community, and cultural change. Human factors in the change process will be emphasized. (Spring—evening.)

264 *Sensitivity Training: Human Relations Laboratory Course* (3) Lippitt
A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunities for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology. (Fall and spring—evening.)

265 *Theory and Design in Human Relations Training* (3) Lippitt
Designed for those interested or involved in conducting human relations training. Theories of learning are reviewed. The laboratory approach to human relations training is explored in depth. Practice in designing, developing training skills, and evaluation of training are covered. Prerequisite: Psychology 264 or a human relations laboratory learning experience. (Fall—day.)

267 *Theories of Organization* (3) Schlesinger
Theory and research in formal organizations. Classical, human relations, and information processing theories of organizations. The effects of organizational design on communication processes, leadership, decision-making, intergroup relations, small group formation, status hierarchies, productivity, motivation, and morale. Open to graduate students in psychology and graduate administrative programs. (Spring—day.)

272 *Seminar: Theories of Personality* (3) Caldwell
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. (Fall—evening.)

281–82 *Practicum in Counseling* (3–3) Phillips
Supervised practical instruction in agencies doing counseling. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

283–84 *Practicum in Clinical Psychology* (3–3) Nolan
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

289–90 *Seminar: Current Research and Theory in Psychology* (3–3)
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester. (Academic year—evening; summer 1963—Psychology 289 (3).)

292 *Seminar: Perception* (3) Walk
Study of current research and theory in the experimental psychology of perception. (Spring—day.)

293 *Seminar: Psychology of Thinking* (3) Goodnow
Thinking and problem solving. Specific topics include: concept formation, the nature of insight, creative thinking, and originality. (Fall—evening.)

295–96 *Research in Psychology* (arr.) The Staff
Individual research by student, carried out under supervision of staff member. (Academic year—as arranged; summer 1963.)

297–98 *Seminar: Concepts of Psychology* (4–4) Finan and Staff
Lecture (3 hours), discussion (1 hour). An overview and analysis of the concepts and major areas of psychology. Designed as a review and integration of knowledge for the Ph.D. candidate preparing for the Comprehensive Examination in general psychology and as a preparation for specialized study and individual research. Required of all Doctoral candidates in psychology. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses, which are available only to students enrolled in the Engineering Administration program and the Off-Campus Division of the College of General Studies.

145 *Principles of Human Relations* (3)

149 *Human Relations in Management* (3)

RELIGION *

Professor J. R. Sizoo
Associate Professor R. G. Jones *(Acting Chairman)*
Associate Professorial Lecturers C. D. Kean, Damian McElrath
Lecturers A. B. Seidman, E. W. Seaman

Bachelor of Arts with a major in Religion (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Religion 9, 10, and 59–60.

Required: the general requirements, pages 38–41, including a minimum of eighteen semester hours in religion beyond first-group courses.

Master of Arts in the field of Religion.—Prerequisite: an undergraduate major in Religion at this University or the equivalent.

Required: the general requirements, pages 43–46. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least twelve must be in third-group religion courses; a maximum of nine may be in a closely related field outside the Department of Religion as approved by the Department.

Master of Arts in the field of Religious Education.—Prerequisite: an undergraduate major in Religion at this University or the equivalent; the following specific courses or the equivalent: Education 108; Psychology 1, 22, and 29; Anthropology 1; Speech 1 or 11.

Required: the general requirements, pages 43–46. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least six must be in third group religion courses; a maximum of twelve may be in a closely related field outside the Department of Religion as approved by the Department.

Doctor of Philosophy in the field of the History of Religion in the United States.—See the Graduate Council Catalogue.

FIRST GROUP

9 *The Old Testament* (3) Jones and Staff

A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening.)

10 *The New Testament* (3) Jones and Staff

A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. (Spring—day and evening; summer 1963.)

59–60 *History of Religion* (3–3) The Staff

First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. (Academic year—day and evening; summer 1963.)

SECOND GROUP

103 *The Prophets, Their Times and Their Message* (3) Jones

The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study. (Fall—evening.)

* The Staff of Instruction is for the academic year 1962–63.

104 *The Life and Thought of Jesus* (3) Kean
A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times. (Spring—evening.)

105 *The Life and Thought of Paul* (3) Jones
Greek and Hebrew backgrounds of early Christianity, the Roman world of the first century, religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's teaching and presentation of the Christian faith, the place of the Pauline epistles in the New Testament. (Fall—day.)

121 *Problems of Western Religious Thought* (3)
The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history. (Not offered 1963–64.)

122 *Christian Ethics and Modern Society* (3) Jones
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. (Summer 1963.)

131 *History of Christianity to the Reformation* (3) McElrath and Staff
The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent. (Fall—day.)

132 *History of Modern Christianity* (3) McElrath and Staff
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day.)

135 *History of Judaism to the Talmud* (3) Seaman
A study of the history and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day.)

136 *History of Medieval and Modern Judaism* (3) Seaman
A study of the history and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day.)

141–42 *Religious Education* (3–3)
Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1963–64.)

172 *Religion in American Culture* (3) The Staff
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion. (Spring—day.)

THIRD GROUP

209–10 *Seminar in Biblical Literature* (3–3) Jones
Study of the main problems of Biblical literary and historical criticism. (Not offered 1963–64.)

211–12 *Seminar in Biblical Thought* (3–3) Jones
Study of the Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Academic year—evening.)

231–32 *Seminar in Early and Medieval Christianity* (3–3) Jones and Staff
An advanced study of the development of Christian thought from primitive beginnings to the Reformation. (Not offered 1963–64.)

233–34 *Seminar in Modern Religious Thought* (3–3) The Staff
Analysis of developments in western religious thought from the 16th century to the present. (Academic year—evening.)

241–42 *Seminar in Religious Education* (3–3)
Advanced course dealing with some of the major problems in the practice of religious education. (Not offered 1963–64.)

271 *Seminar in American Religious History to 1830* (3) The Staff
Study of religious thought and life during the colonial and early national period. (Fall—as arranged.)

273 *Seminar in American Religious History since 1830* (3) (Not
Analysis of modern and contemporary trends in American religious thought. offered 1963–64.)

291–92 *Readings and Research* (3–3) The Staff
Investigation of special problems in the history of religion. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

ROMANCE LANGUAGES AND LITERATURES*

Professors A. T. Deibert *(Emeritus)*, G. E. McSpadden, L. A. Vigneras, Rafael Supervía
Associate Professors J. W. Robb, W. G. Clubb *(Chairman)*, C. Y. Meade, G. E. Mazzeo
Assistant Professors J. L. Metivier, Jr., Carlos Lozano, J. A. Frey, Fred Abrams
Instructors Elizabeth Neyman, C. P. Huvé, Eulogia Llansa, R. M. Riggs
Language Workshops Supervisor R. T. Tyser

Courses are generally conducted in the language concerned. For General Courses in Romance Languages and Literatures (French, Italian, Portuguese, Spanish) see page 137.

Bachelor of Arts with majors in (1) *French Language and Literature*, (2) *Spanish-American Literature*, and (3) *Spanish Language and Literature (Field-of-Study).*—Prerequisite: the Arts and Letters curriculum, page 31.

Required: the general requirements, pages 38–41 and the grade "pass" on the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers and their works. Proficiency in the spoken and written language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is generally required for graduate work. The Department provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

Master of Arts in the fields of (1) *French Language and Literature*, (2) *Spanish-American Literature*, and (3) *Spanish Language and Literature*—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements, pages 43–46. The thirty hours of required work

* The Staff of Instruction is for the academic year 1962–63.

must include a thesis, for which six hours of credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

Master of Arts in the field of Linguistics (an interdepartmental degree offered by the departments of Germanic Languages and Literatures and Romance Languages and Literatures).—Prerequisite: a Bachelor of Arts degree, preferably with a major in French, German, or Spanish at this University, or the equivalent, and the approval of candidacy by the Committee on Linguistic Study.

Required: the general requirements, pages 43–46, including a thesis and 24 semester hours of second-group courses selected in consultation with the chairman of the department directing the Master's program and approved by the Committee on Linguistic Study. The candidate's program will normally be selected from courses in Anthropology, English, French, German, Mathematics, Psychology, and Spanish listed on page 100.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Arts in Education with teaching fields in French and in Spanish.—Prerequisite: the Education curriculum, pages 33–34.

Required: the French option or the Spanish option and the professional courses listed in the School of Education Catalogue.

FRENCH

FIRST GROUP

1–2 *First-year French* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year French** (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: French 1–2 or two years of high school French. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *French Conversation and Composition* (3–3) The Staff

Prerequisite: French 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

49 *French Readings for Nonmajor Students* (3) Frey and Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1963.)

51–52 *Survey of French Literature and Civilization** (3–3) Metivier

The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening.)

SECOND GROUP*

109–10 *Advanced French Conversation and Composition* (3–3) Meade

Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: French 10 or the equivalent and permission of the instructor. (Academic year—day.)

* French 3–4 is required, and French 51–52 is recommended, as prerequisite to all second-group courses.

119–20 *French Literature of the 16th Century* (3–3) Metivier
Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. (1963–64 and alternate years: academic year—evening.)

121–22 *French Literature of the 17th Century* (3–3) Clubb
History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (1964–65 and alternate years.)

123–24 *French Literature of the 18th Century* (3–3) Meade
History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

125–26 *French Literature of the 19th Century* (3–3) Frey
Romanticism and realism: fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years.)

127–28 *French Literature of the 20th Century* (3–3) Clubb
Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129–30 *Contemporary French Literature* (3–3) Clubb, Meade
Existentialism and surrealism in the novel, poetry, and drama from 1938 to the present. Lectures, discussions, and reports. (Summer 1963—French 130 (3).)

199–200 *Proseminar: Readings for the Major in French Literature* (3–3) Frey
Conferences and group discussions. (Academic year—as arranged.)

THIRD GROUP

201 *Doctoral Seminar* (3) Clubb
Introduction to the doctoral program. Methods of research and presentation in the Romance languages and literatures. (Not offered 1963–64.)

202 *History and Methods of Literary Analysis and Criticism* (3) Meade
Literary criticism from Aristotle to the New Critics. Methods to be demonstrated and applied to selected passages from French literature. Emphasis on technique known as *explication de texte*. (Not offered 1963–64.)

203 *Problems of Pronunciation and Intonation* (3) Vignéras
(Fall—day.)

212 *Historical French Grammar* (3) Vignéras
Study of phonology, morphology, and syntax of Old French, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in French literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses, and an elementary knowledge of Latin. (Spring—day.)

213–14 *Old French* (3–3) Vignéras
Survey of French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and the permission of the instructor. (Academic year—day.)

224 *Seminar: The Age of Rabelais* (3)
Humanism and the Reformation in French letters. Rabelais and the *conteurs*. Research projects, papers, reports. (1963–64 and alternate years: fall—day.)

225 *Seminar: The Age of Montaigne* (3)
Montaigne: the man and the development of his thought. The literature of the Religious Wars. Research projects, papers, reports. (1963–64 and alternate years: spring—day.)

226 *Seminar: French Poetry from Villon to Malherbe* (3) Frey
Theories and the practice of the art of poetry in the French Renaissance. The cultivation of a poetic language and the development of genres. Papers, reports. (1964–65 and alternate years: fall.)

227 *Seminar: The Renaissance in Europe* (3) Clubb
The sources and nature of literary trends in Western Europe from Dante to Calderón, and their relationship to French literature. Readings, papers, and discussion. (1964–65 and alternate years: fall.)

231–32 *Theater in the 17th Century* (3–3) Clubb
A survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121–22 or the equivalent. (1964–65 and alternate years: academic year.)

233 *Seminar: 17th Century Literary Doctrines* (3) Clubb
The origin and formation of literary doctrines and theories and their relationship to prose, poetry, and drama of the 17th century. Readings, discussions, and papers. (Offered 1964–65.)

234 *Nondramatic Literature of the 17th Century* (3) Clubb
Rationalism and the revolt against authority expressed in literature. Discussion of texts and collateral readings. (Fall—day.)

240 *The Sentimental Current in the 18th Century* (3) Meade
Sentimentality in the novel and drama of 18th century France. English influences on French authors. The meaning of sentimentality and its later influences. (Offered 1964–65.)

241 *The Rationalistic Current in the 18th Century* (3) Meade
Bayle, Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and the Encyclopedists as philosophers, dramatists, and critics of their age; an assessment of their contributions to the intellectual evolution of France and Europe. (Offered 1964–65.)

242 *Seminar: the French Novel in the 18th Century* (3) Meade
Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Offered 1965–66.)

243 *Voltaire and Rousseau* (3) Meade
Voltaire and Rousseau as representatives and critics of their age. (Fall—day.)

244 *Seminar: Diderot and the Encyclopedia* (3) Meade
Diderot's contribution to 18th century novel, drama, and aesthetic criticism; the Encyclopedia as embodiment of 18th century thinking. (Spring—day.)

250 *Romanticism in France* (3) Frey
The theory and practice of romanticism in France: romantic love, the Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. Romantic criticism. The preparation for realism. (Offered 1965–66.)

251 *Realism and Naturalism* (3) Frey
Prose style in the French novel from Balzac to Zola; the influence of history, science, philosophy, and art on the literary doctrines of realism and naturalism; realistic currents with romanticism; the minor realists and naturalists; realism in poetry and in the theatre. (Offered 1965–66.)

252 *Seminar: Flaubert* (3) Frey
Reading and analysis of the works of Flaubert from *Mémoirs d'un fou* to *Bouvard et Pécuchet*, plus selected correspondence. Romantic elements in the works of Flaubert; Flaubert and the impersonality of the writer, the doctrine of art for art, Bovarysme, style indirect libre. Contemporary criticism of Flaubert. (Offered 1964–65.)

253 *Seminar: Symbolism in Poetry* (3) Clubb
The origin and nature of symbolism from Baudelaire to Valéry. Close analysis of texts and reports. Prerequisite: French 127–28 or the equivalent. (Offered 1964–65.)

Frey

254 *Seminar: Victor Hugo* (3)
Hugo and the development of the romantic ideal in prose and poetry; Hugo and romantic theater and criticism. Analysis, classification, and criticism of romantic themes and techniques in the works of Hugo; contemporary Hugo criticism. (Offered 1964–65.)

Clubb

255 *Seminar: Stendhal and Le Beylisme* (3)
Stendhal's novels and autobiographical works. Stendhal and his public. Readings, discussions, and papers. (Offered 1965–66.)

The Staff

299–300 *Thesis* (3–3)
(Academic year—as arranged.)

SPANISH

FIRST GROUP

The Staff

1–2 *First-year Spanish* (3–3)
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

The Staff

3–4 *Second-year Spanish** (3–3)
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. Prerequisite: Spanish 1–2 or two years of high school Spanish. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

The Staff

9–10 *Spanish Conversation and Composition* (3–3)
Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

The Staff

49 *Spanish Readings for Nonmajor Students* (3)
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

Supervia

51–52 *Survey of Spanish Literature and Civilization** (3–3)
The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

SECOND GROUP*

Mazzeo

109–10 *Advanced Spanish Conversation and Composition* (3–3)
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: Spanish 10 or the equivalent and permission of the instructor. (Academic year—day.)

Abrams

121–22 *Spanish Literature of the Golden Age* (3–3)
Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry, prose. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

McSpadden

123–24 *Cervantes: Don Quijote* (3–3)
Life and works of Cervantes: the *Quijote* and its relationship to other works of the Golden Age. Lectures, discussions, and reports. (1964–65 and alternate years.)

* Spanish 3–4 is required, and Spanish 51–52 is recommended, as prerequisite to all second-group courses in Spanish.

125–26 ***Modern Spanish Literature*** (3–3) Mazzeo
Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years: academic year—day.)

127–28 ***Contemporary Spanish Literature*** (3–3) Supervía
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129 ***The Romantic Drama in Spain*** (3) Mazzeo
Class analysis of texts, collateral reading, and lectures on the Spanish Romantic Drama. (Summer 1964 and alternate summers.)

151–52 ***The Spanish-American Novel*** (3–3) Robb
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (1965–66 and every third year.)

155–56 ***Spanish-American Literature to 1880*** (3–3) Robb
The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (1963–64 and every third year: academic year—evening.)

157–58 ***Spanish-American Literature since 1880*** (3–3) Robb
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (1964–65 and every third year; summer 1963—Spanish 158 (3).)

197–98 ***Proseminar: Readings for the Major in Spanish-American Literature*** (3–3) Robb
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

199–200 ***Proseminar: Readings for the Major in Spanish Literature*** (3–3) Lozano
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

THIRD GROUP

201 ***Doctoral Seminar*** (3) The Staff
Introduction to the doctoral program, advanced study and methodology in the Romance languages and literatures. (Not offered 1963–64.)

202 ***Explicación de textos*** (3) Robb
An analytical introduction to the study of Spanish and Spanish-American literature. The method will be demonstrated and practiced on selected passages. (1964–65 and alternate years.)

252 ***Historical Spanish Grammar*** (3) McSpadden
Study of phonology, morphology, syntax, and lexicology of Old Spanish, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisites: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1965–66.)

254 ***Old Spanish*** (3) McSpadden
Literature and language: *El poema de Mío Cid, El Conde, Lucanor, El Libro de Buen Amor*, etc. Prerequisite: a second group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1964–65.)

291 ***Seminar: Works of Cervantes*** (3) McSpadden
Problems of composition, interpretation, criticism, literary history, and aesthetics. (Offered 1964–65.)

222 *Seminar: Spanish Mystics* (3) Lozano
A study of Spanish mysticism with particular attention to the poetry of Ramon Lull, Fray Luis de León, Santa Teresa, San Juan de la Cruz, and other mystics. (Offered 1964–65.)

223 *Seminar: Drama of the Golden Age* (3) Abrams
A study of the Spanish theater from its beginnings to Calderón. Reading and analysis of representative works of Lope, Tirso, Alarcón, Calderón, and the pre-Lopistas. (Offered 1964–65.)

224 *Seminar: the Renaissance in Spain* (3) Abrams
A study of the thought and literary currents that led to the Spanish Renaissance and its development. (Spring—day.) Supervis

225 *Seminar: Lyric Poetry of the Golden Age* (3)
A study of the principal lyric poets from Garcilaso. (Fall—day.) Lozano

226 *Seminar: Picaresque Novel* (3)
The Picaresque genre in Spain: origin and development and most recent manifestations. Reading and commentary on texts. (Offered 1965–66.) Abrams

227 *Seminar: Lope de Rueda* (3)
Origins of the Spanish popular theater. Influence of Plautus and the Italian theater on the art of Rueda. Popular language in the *pasos* and comedies of Rueda. Influence of Rueda on Cervantes. Explication of texts. (Fall—day.) Marrero

231 *Seminar: Spanish Writers of the 18th Century* (3)
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Offered 1965–66.) Supervis

241 *Seminar: Works of Galdós* (3)
Ideological and stylistic analysis; relationship of his works to the literary movements of the second half of the 19th century. (Offered 1964–65.) Marrero

242 *Seminar: Spanish Romanticism* (3)
Lectures and analysis of principal works and authors. Collateral readings. Problems of origins and developments. (Spring—day.) Marrero

244 *Seminar: the Spanish Novel of the 19th Century* (3)
A study of the leading Spanish novelists of the 19th century. Reading and analysis of important works. (Offered 1964–65.) Supervis

251 *Seminar: Works of Unamuno and Ortega y Gasset* (3)
A study of the thought of Unamuno and Ortega y Gasset; reading of texts and commentaries. (Offered 1965–66.) Supervis

252 *Seminar: Spanish Literature since the Civil War* (3)
A study of all literary currents in Spain since the Civil War: drama, prose, poetry. (Offered 1965–66.) Robb, Lozano

253 *Seminar: Modernismo* (3)
A study of the genesis and development of Modernismo in Hispanic America and Spain with special attention to Spain. (Spring—day.) Robb

261 *Seminar: Spanish-American Essayists* (3)
The Spanish-American essay as an artistic form, studied in selected modern essayists such as Rodó, Ricardo Rojas, Vasconcelos, Arciniegas. (Fall—day.) Lozano

262 *Seminar: Contemporary Spanish-American Poetry* (3)
Studies of aesthetic principles and poetic movements. Emphasis on Huidobro, Neruda, and others. (Spring—day.) Robb

263 *Seminar: Contemporary Spanish-American Novelists* (3)
Selected contemporary novelists such as Gallegos, Barrios, M. Rojas, J. R. Romero, Carlos Fuentes, Alejo Carpentier. (Offered 1964–65.)

264 *Seminar: Contemporary Spanish-American Short Story* (3) Robb
Twentieth Century *Cuentistas* from Quiroga to J. L. Borges, J. J. Arreola, and others (Offered 1964–65.)

266 *Seminar: Alfonso Reyes* (3) Robb
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Offered 1965–66.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) McSpadden
History; problems and methods of analysis in the physiological and acoustical branches of phonetics and intonation, their relationships, their application to the Romance languages, and oral aspects of the Romance literatures. (Spring—day.)

272 *Comparative Romance Languages and Literatures I (Italian)* (3) Lozano
Intensive study of Italian grammar with reference to French, Spanish, and other Romance languages. (1964–65 and alternate years.)

273 *Comparative Romance Languages and Literatures II (Italian)* (3) Clubb
For candidates for the degree of Doctor of Philosophy. The Italian language and literature from Dante to Goldoni. Lectures, discussions, exercises, and readings. Prerequisite: Romance 272 *Comparative Romance Languages and Literatures I* or the equivalent. (1964–65 and alternate years.)

275–76 *Comparative Romance Languages and Literatures III–IV (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Lectures, discussions, exercises, and readings. (Academic year—day.)

277–78 *Comparative Romance Languages and Literatures V–VI (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Portuguese and Brazilian literatures from Camões to the 20th century. (Offered 1964–65.)

279 *Introduction to Romance Philology and Linguistics* (3) McSpadden
Study of principles found in the development of the Romance languages and methods of analysis at the present time. A general course for graduate students in the fields of the Romance languages and literatures. Prerequisite: an elementary knowledge of Latin. This course is normally followed by French 212 or Spanish 212. (Offered 1965–66.)

280 *Introduction to Romance Stylistics* (3) Frey
Special emphasis will be placed on examples from French and Spanish literature. (Offered 1964–65.)

283 *Problems of Teaching Romance Languages and Literatures in College* (3) McSpadden
For candidates for the degree of Doctor of Philosophy. Principles and problems of learning and teaching the language and literature. Apprenticeship in college classes and the language laboratory. (Offered 1964–65.)

SECRETARIAL STUDIES*

Associate Professor Mildred Shott *(Chairman)*
Associates W. R. Throckmorton, Ruth Tyler

Associate in Arts (Two-year vocational curriculum in Secretarial Studies).—For curriculum, see page 37.

Associate in Secretarial Administration.—See the College of General Studies Catalogue for complete details.

Bachelor of Arts in Education with a teaching field in Business Education.—Prerequisite: the Education curriculum, pages 33–34.

Required: the Business Education option and the professional courses listed in the School of Education Catalogue.

1 *Elementary Typewriting* (3) Shott and Staff
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $7. (Fall and spring—evening.)

2 *Intermediate Typewriting* (3) Shott and Staff
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $7. (Fall—evening; spring—day and evening.)

11 *Elementary Shorthand and Transcription* (3) Shott and Staff
A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $3. (Fall—day and evening.)

12 *Intermediate Shorthand and Transcription* (3) Shott and Staff
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, $5. (Spring—day and evening.)

15 *Advanced Shorthand, Typewriting, and Transcription* (3) Shott
Dictation and transcription involving vocabularies in specific businesses. *Minimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, $5. (Fall—day.)

16 *Secretarial Shorthand, Typewriting, and Transcription* (3) Shott
Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, $5. (Spring—day.)

51 *Business Correspondence* (3) Shott
Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature. (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

54 *Secretarial Practice* (3) Shott
A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships. (Spring—day.)

* The Staff of Instruction is for the academic year 1962–63.

SLAVIC LANGUAGES AND LITERATURES*

Associate Professor Helen Yakobson *(Chairman)*
Assistant Professors G. A. Olkhovsky, Vadim Medish
Lecturers Kiril Jaszenko, M. I. Filipovitch-Nikatch, Victoria Sandor

Bachelor of Arts with a major in Russian (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31.
Required: in addition to the general requirements, pages 38–41, Slavic Languages 91–92 or 93–94, 179–80, and 161–62 or History 145–46, and eighteen semester hours to be selected from second-group courses in Russian.
Russian majors are expected to have a reasonable proficiency in spoken and written Russian, a firm grasp of the fundamentals of Russian grammar, a general comprehension of Russian culture and history, and a general knowledge of Russian literature, as well as some first-hand acquaintance with writings of major Russian writers. Students who are already proficient in Russian, may upon passing an appropriate examination, waive any or all of the first-group language courses, as well as up to six hours of second-group language courses.

Bachelor of Arts in Education with a major teaching field in Russian.—Prerequisite: the Education curriculum, pages 33–34.
Required: the professional courses listed in the School of Education Catalogue.

FIRST GROUP

1-2 *First-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, $6 a semester. *(First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3-4 *Second-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, $6 a semester. *(First half:* fall—day and evening; spring—evening. *Second half:* fall—evening; spring—day and evening.)

5-10 *Russian Conversation* (3–3) The Staff
Listening comprehension and oral practice. Prerequisite: Russian 3–4 or permission of the instructor. Workshop fee, $6 a semester. (Academic year—evening.)

97 *Beginning Russian for Reading Examination Candidates* (0) The Staff
For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, $99. (Fall—evening.)

98 *Russian Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4 or 47 or the equivalent. (Spring—evening.)

91-92 *Introduction to Russian Literature* (3–3) Medish
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion. (Academic year—day.)

* The Staff of Instruction is for the academic year 1962-63.

93–94 *Introduction to Slavic (non-Russian) Literature* (3–3) — Filipovitch-Nikatch
A survey of non Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion. (Academic year—evening.)

SECOND GROUP

101–2 *Readings in Modern Russian* (3–3) — Yakobson and Staff
Representative readings in the social sciences and Soviet periodical literature; study of current political terminology, abbreviations, and Soviet idiom. (1963–64 and alternate years: academic year—evening.)

103–4 *Scientific Russian* (3–3) — The Staff (1964–65 and alternate years.)
Readings in the major fields of Russian contemporary scientific literature.

109–10 *Advanced Russian Conversation and Composition* (3–3) — Yakobson
Developing proficiency in oral and written expression. (Academic year—evening; summer 1963.)

141–42 *Russian Literature of the 19th Century* (3–3) — Yakobson
Lectures, special reports, class analysis of selected works of 19th century Russian literature—in Russian. (1964–65 and alternate years.)

151–52 *Russian Literature of the 20th Century* (3–3) — Yakobson
Lectures, special reports, class analysis of selected works of 20th century Russian literature—in Russian. (Academic year—day.)

161–62 *Russian Culture* (3–3) — Olkhovsky
A survey of Russian cultural heritage from the origins of ancient Russia to the present. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening.)

179–80 *Advanced Grammar and Composition for Russian Majors* (1–1) — Yakobson
(Academic year—as arranged.)

SOCIOLOGY AND ANTHROPOLOGY *

Professor H. L. Geisert
Associate Professor R. W. Stephens *(Acting Chairman)*
Assistant Professors J. M. Campbell, P. F. Gallagher
Lecturers Margaret Nelson, C. L. Perian, C. R. Nathan, Carmi Schooler

Bachelor of Arts with a major in Sociology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Anthropology 1 and Sociology 2, or the equivalent.

Required: in addition to the general requirements, pages 38–41, twenty-four semester hours in Sociology, which must include 148 and 149.

* The Staff of Instruction is for the academic year 1962–63.

Bachelor of Arts with a major in Anthropology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Anthropology 1 and Sociology 2, or the equivalent.

Required: in addition to the general requirements, pages 38–41, twenty-four semester hours in Anthropology, which must include 192.

Master of Arts in the field of Sociology.—Prerequisite: the degree of Bachelor of Arts with a major in Sociology at this University or the equivalent.

Required: the requirements, pages 43–46. All courses must be approved in advance by the adviser.

Master of Arts in the field of Anthropology.—Prerequisite: the degree of Bachelor of Arts with a major in Anthropology from this University or the equivalent.

Required: the requirements, pages 43–46. All courses must be approved in advance by the adviser.

Master of Arts in the field of Linguistics.—See the departments of Germanic Languages and Literatures, page 91, and Romance Languages and Literatures, page 131.

SOCIOLOGY

FIRST GROUP

2 *Man, Culture, and Society II** (3) **The Staff**

(Formerly Sociology and Anthropology 1)

Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. (Fall and spring—day and evening; summer 1963.)

41 *American Social Problems* (3) Nathan

(Formerly Sociology and Anthropology 2)

Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment. (1963–64 and alternate years: fall—day.)

SECOND GROUP

120 *Aging in Modern Society* (3) Nathan

Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment; the social role of the aged. (1963–64 and alternate years: spring—day.)

122 *Fields of Social Work* (3)

Introduction to the nature and scope of social work; the development of social work programs; functions of social case work, social group work, and social action. (1963–64 and alternate years: fall-evening.)

124 *Medical Sociology* (3) Nathan

Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1964–65 and alternate years.)

126 *Urban Sociology* (3)

The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1963–64 and alternate years: spring—day.)

129 *Race and Minority Groups* (3)

Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1963–64 and alternate years: fall—day.)

* Anthropology 1 and Sociology 2 combine to make a year course which is prerequisite to all other courses in Sociology and Anthropology.

Nelson

130 *Social Stratification: Class and Status* (3)
(Formerly Sociology and Anthropology 161)
Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1964–65 and alternate years.)

131 *Social Institutions* (3)
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1964–65 and alternate years.)

Stephens

132 *Courtship and Marriage* (3)
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selections, factors in marital adjustment; prediction and counseling. (1963–64 and alternate years: spring—day.)

Stephens

133 *The Family* (3)
Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization. (1964–65 and alternate years; summer 1963.)

Perian

135 *Juvenile Delinquency* (3)
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1964–65 and alternate years.)

Perian

136 *Criminology* (3)
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1964–65 and alternate years.)

137 *Sociology of Law* (3)
The law as a social phenomenon and an agency of social control. Sociological analysis of particular problems of legal concepts, doctrine, and institutions. (1963–64 and alternate years: spring—evening.)

140 *Military Sociology* (3)
The study of the military establishment as one of the important institutions of modern society; an analysis of the distinctive forms of military organization; the social role of the professional military man. (1963–64 and alternate years: spring—evening.)

144 *Mass Communications* (3)
The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1964–65 and alternate years.)

Stephens

146 *Industrial Sociology* (3)
Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale. (1964–65 and alternate years.)

Stephens

147 *Sociology of Large Organizations* (3)
Sociological analysis of the structural characteristics of large complex organizations; individual accommodations to such organizations; the impact of the large organizational pattern on American social life. (1964–65 and alternate years.)

Schooler

148 *Methods of Social Research* (3)
(Formerly Sociology and Anthropology 181)
Analysis of social research techniques and the scientific method; application to social data of the case study, social survey, statistical, sociometric, and experimental methods. (1963–64 and alternate years: fall—day.)

Stephens

149 *Development of Social Theory* (3)
Systematic study of the important schools of sociological theory, both European and American developments; and evaluation of the scientific contributions of each school. (1963–64 and alternate years: spring—day.)

THIRD GROUP

221 *Seminar: Current Trends in Sociology* (3) Geisert
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (1964–65 and alternate years.)

225 *Seminar: Small Groups* (3)
General characteristics of small groups and their measurement; sociography of groups, evaluation of small group theory and sociometry; other techniques of small group research. (1963–64 and alternate years: fall—as arranged.)

226 *Problems of Underdeveloped Areas* (3) Geisert
Characteristics and problems of underdeveloped areas; the interrelationship of demographic, economic, social, and cultural factors; measures and techniques to introduce cultural changes. (1964–65 and alternate years; summer 1963.)

228 *Criminal Behavior: Research and Theory* (3) Geisert
A re-evaluation of theories of criminal and deviant behavior based on recent research findings; implications for the correction and prevention of criminal behavior. (1964–65 and alternate years.)

235 *Social Movements* (3)
(Formerly Sociology and Anthropology 162)
Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and showing the way social movements develop. (1963–64 and alternate years: spring—as arranged.)

241 *Population Problems* (3)
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies; eugenics and birth control. (1964–65 and alternate years.)

295–96 *Research* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

ANTHROPOLOGY

FIRST GROUP

1 *Man, Culture, and Society I** (3) The Staff
(Formerly Sociology and Anthropology 51)
The physical evaluation of man and the origins and development of culture, including a survey of the topic divisions of the field. (Fall and spring—day and evening; summer 1963.)

SECOND GROUP

152 *Physical Anthropology* (3)
A survey of human biology. The mechanisms of speciation and the race process, including their cultural determinants. (1963–64 and alternate years: spring—evening.)

156 *Psychological Anthropology* (3) Gallagher
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (1963–64 and alternate years: fall—day; summer 1963.)

* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

154 *Primitive Economics* (3) Gallagher
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non-Western societies. (1963–64 and alternate years: spring—day.)

155 *Primitive Religion* (3) Campbell
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (1964–65 and alternate years.)

161 *Language and Culture* (3) Gallagher
(Formerly Sociology and Anthropology 143)
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (1963–64 and alternate years: fall—day.)

172 *Native People of the New World* (3) Gallagher
A survey of representative Indian groups of the Americas from primitive bands to high civilizations, stressing the patterned nature of diverse cultural responses to universal problems of human existence. (1963–64 and alternate years: spring—day.)

173 *Cultures of the Pacific* (3) Campbell
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1964–65 and alternate years.)

182 *New World Archeology* (3) Gallagher
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1963–64 and alternate years: spring—day.)

183 *Old World Archeology* (3) Campbell
A survey of the culture history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1963–64 and alternate years: fall—day.)

192 *Anthropological Theory* (3) Campbell
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (1963–64 and alternate years: fall—evening.)

193 *Anthropological Methods* (3) Campbell
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1964–65 and alternate years.)

THIRD GROUP

261 *Cultural Origins of the New World* (3) Campbell
(1963–64 and alternate years: fall—as arranged.)

262 *Applied Anthropology* (3) Gallagher
(Formerly Sociology and Anthropology 155)*
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1964–65 and alternate years.)

263 *Culture, Contact, and Change* (3) Campbell
Western impact on non Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (Not offered 1963–64.)

265 *Cultural Ecology* (3) The Staff
A cross-cultural examination of the relationship of technology to the natural world. (1964–65 and alternate years.)

285–86 *Research in Anthropology* (arr.)
(Academic year—as arranged; summer 1963.)

289–90 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following course for students in the War College programs of the College of General Studies.

263 *Culture, Contact, and Change* (3)

SPEECH *

Professors L. P. Leggette *(Chairman)*, C. W. Pettit *(Director of Speech Clinic)*, G. F. Henigan, Jr. *(Director of Forensics)*, E. L. Stevens
Professorial Lecturers Zelda Fichandler, Edna Monsees
Associate Professor Lee Bielski
Associate Professorial Lecturers Zelda Kosh, W. J. Elsen
Assistant Professor K. R. Sanders
Lecturers Edith Surrey, A. A. Nilles, S. L. Berlinsky, Edwin Shutts, H. C. Krebs, Lewis Shollenberger, Florence Lowndes
Associates Joan Regnell, Lois Richards, Ruth Cox

Bachelor of Arts with a major in Speech (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including Speech 1, 2, 11, 32.
Required: the general requirements, see pages 38–41, including the passing of a speech proficiency test early in the program; Speech 101, 121, 154, 171; and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

Bachelor of Arts with a major in Dramatic Art (Departmental).—Prerequisite: the Arts and Letters curriculum, page 31, including twelve hours in the basic courses in speech and six hours in English 51–52, 71–72, or 91–92.
Required: the general requirements, pages 38–41, including the passing of a speech proficiency test early in the program. Speech 101–2, a minimum of nine additional hours in theater arts in the Speech Department and nine hours in dramatic literature in the English Department, as approved by the adviser.

Master of Arts in the field of Speech Correction.—Prerequisite: the degree of Bachelor of Arts with a major in Speech from this University, or the equivalent.
Required: the general requirements, pages 43–46.

Master of Fine Arts in the field of Dramatic Art.—Prerequisite the degree of Bachelor of Arts from this University, or the equivalent.
Required: the general requirements, see pages 43–46, twelve hours of second- and third-group courses in drama and dramatic literature offered on campus, and twelve hours in theater offered at the Arena Stage.
Four semesters in residence are required to complete this program. For detailed information, consult the Chairman of the Department.

Bachelor of Arts in Education with a teaching field in Speech.—Prerequisite: the Education curriculum, pages 33–34.
Required: the Speech option and the professional courses listed in the School of Education, Catalogue.

* The Staff of Instruction is for the academic year 1962–63.

FIRST GROUP

A *Speech Clinic* — Pettit, Bielski
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4. (Academic year—as arranged; summer 1963.)

B *American Speech for Foreign Students* (3) — Bielski
Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5. (Fall and spring—day and evening; summer 1963.)

1 *Effective Speaking* (3) — Leggette and Staff
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2. (Fall and spring—day and evening; summer 1963.)

2 *Persuasive Speaking* (3) — Henigan, Sanders
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)

11 *Voice and Diction* (3) — The Staff
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4. (Fall and spring—day and evening; summer 1963.)

32 *Oral Reading* (3) — Leggette and Staff
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, $2. (Fall—day; spring—day and evening; summer 1963.)

SECOND GROUP

101 *Voice and Phonetics* (3) — Bielski
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, $4. (Fall—day; summer 1963.)

102 *Oral Interpretation of Literature* (3) — Leggette
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech 32. Recording fee, $2. (Spring—day.)

111 *Effective Speech Communication* (3) — Elsen
The tools and principles of effective speech communication, including practice in the organization, delivery, and the evaluation of presentations commonly encountered by professional personnel. Not open to speech majors. (Not offered 1963–64.)

121 *Group Discussion and Conference Leadership* (3) — Stevens
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. (Fall—day; spring—evening; summer 1963.)

126 *Public Discussion and Debate* (3) — Henigan
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor. (Spring—day.)

127–28 *Advanced Debate Practice* (1–1) — Henigan
Admission by permission of the instructor, after one semester of satisfactory participation in the intercollegiate debate program. This course may be repeated for a total of 4 semester hours. (Academic year—as arranged.)

133–34 *Radio and TV Broadcasting* (3–3) Shollenberger
A study of the development of the radio and TV industries, station organization and management, equipment, production techniques; practice in the preparation and performance of radio programs. Recording fee, $5 a semester. (Academic year—evening.)

141 *Public Speaking: Advanced Forms* (3) Henigan
The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Not offered 1963–64.)

145 *Speech Criticism* (3) Henigan
A study of rhetorical theory with application to the criticism of representative American and British oratory. Admission by permission of the instructor. (Spring—day.)

153 *Acting* (3) Leggette
Study and practice in the fundamentals of acting technique. Prerequisite: Speech 32. Laboratory fee, $5. (Fall—evening.)

154 *Play Production* (3) Leggette
Fundamentals of play production. Under the supervision of the instructor, students prepare one-act plays for presentation. Laboratory fee, $5. (Spring—evening.)

155–56 *Play Production Practice* (1–1) The Staff
Practical work in theater. (Academic year—as arranged.)

166 *History of the Theater* (3) Nilles
A general survey of the rise of the theater, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. (Not offered 1963–64.)

169 *Creative Dramatics* (3) Lowndes
A study of creative dramatics and its use as a learning tool. (Fall—evening.)

170 *Children's Theater* (3) Lowndes
Theory and practice in creating and producing plays for children. (Spring—evening.)

171 *Introduction to Speech Correction* (3) Pettit
A survey of the disorders of speech, including symptomatology, testing, causation, and therapy. (Fall—evening.)

174 *Speech Therapy* (3) Bielski
Clinical techniques and procedures involved in the correction of the disorders of speech. Prerequisite: Speech 101 and 171. (Spring—day.)

176 *Speech Correction* (3) Pettit
Advanced study of the disorders of speech. Prerequisite: Speech 171. (Spring—evening.)

177–78 *Clinical Practice in Speech Therapy* (1–1) The Staff
Supervised case work in remedial speech—the University Speech Clinic, Children's Hospital, District of Columbia Crippled Children's Society, and Public School system. Weekly meetings to discuss therapeutic techniques for the common speech problems. This course may be repeated for a total of 4 semester hours. Prerequisite: Speech 101, 171, 174, and permission of the instructor. (Academic year—as arranged; summer 1963.)

182 *Hearing Problems and the Testing of Hearing* (3) Shutts
A study of the field of audiology with emphasis on the testing of hearing. (Fall—evening.)

183–84 *Clinical Practice in Hearing Therapy* (1–1) The Staff
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and Children's Hospital. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182 and permission of the instructor. (Academic year—as arranged; summer 1963.)

THIRD GROUP

251 *Rehearsal and Performance* (3) Arena Stage Staff
A course putting into practice the principles and techniques of acting through participation in play rehearsals and performances at the Arena Stage. Admission by audition or interview. (Fall and spring—as arranged.)

254 *Directing Problems* (3) Arena Stage Staff
Observation and participation in solving the problems involved in directing plays. Admission by interview. (Fall and spring—as arranged.)

255 *Techniques of Staging* (3) Arena Stage Staff
Application of theory and principles of scene design, costuming, lighting, make-up, and related stage techniques. Admission by interview. (Fall and spring—as arranged.)

263 *Theater Management* (3) Arena Stage Staff
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged.)

264 *Producing Problems* (3) Arena Stage Staff
Problems involved in producing community and professional theater. Admission by interview. (Fall and spring—as arranged.)

279 *Speech Science* (3) Berlinsky
The anatomy, physiology, physics, and psychology of speech production, with a survey of experimental work. (Not offered 1963–64.)

280 *Speech Pathology* (3) Pettit
An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Prerequisite: Speech 171 and 176. (Fall—day.)

284 *Speech Reading and Auditory Training* (3) Shutts
Theory and practice in speech reading and auditory training with an analysis of methods used for the instruction of hearing handicapped children and adults. Prerequisite: Speech 182. (Spring—evening.)

285 *Childhood Aphasia* (4) Monsees
Designed to acquaint speech therapists and teachers of exceptional children with the Association Method of rehabilitation; background lectures dealing with neurological, psychological, and psychiatric aspects of language disorders in children; current theories and practices in therapy. Observation and clinical practice with classes of aphasic children at the Children's Hospital School for Aphasic Children. Prerequisite: undergraduate degree in speech and hearing, special education, or allied fields. (Summer 1963.) Pettit

286 *Seminar in Speech Pathology* (3) The Staff
(Spring—evening.)

294 *Research in Dramatic Art* (arr.) The Staff
(Spring—as arranged.)

295–96 *Research in Speech and Hearing* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

COURSE OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses the University offers the following course, which is available to personnel in the U. S. Navy and Marine Corps.

111 *Effective Speech Communication* (3)

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)
English 125, *Introduction to English Linguistics* (3)
English 135–36, *Shakespeare* (3–3)
English 175–76, *American Drama* (3–3)
English 183–84, *The English Drama* (3–3)
English 235–36, *Studies in Shakespeare and His Contemporaries* (3–3)
Education 134, *Student Teaching in Secondary Schools* (6 to 9)
Education 152, *Teaching Speech* (2 to 4)
Psychology 115, *Psychology of Language and Communication* (3)

STATISTICS *

Professors E. H. Johnson, H. F. Bright *(Chairman)*, Solomon Kullback
Professorial Lecturer Samuel Greenhouse
Associate Professorial Lecturers Seymour Geisser, Morton Kupperman, Arnold Heyl
Assistant Professor R. E. Thomas
Lecturers S. J. Armore, Fred Frishman, W. M. Wolman

Bachelor of Arts or *Bachelor of Science with a major in Mathematical Statistics (Field-of-Study)*.—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Mathematics 23 or former 30; Statistics 91.
Required: the general requirements, pages 38–41, including Mathematics 24; Statistics 115, 116, 155, 157–58, and six additional hours of second group Statistics courses selected with the approval of the adviser; a minimum of twenty-four semester hours of courses in other departments approved by the adviser as contributing to a well-organized program; and the grade of "pass" on the major examination at the end of the senior year. For further details, consult the adviser.

Master of Arts or *Master of Science in the field of Mathematical Statistics*.—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematical Statistics at this University, or the equivalent.
Required: the general requirements, pages 43–46, including a thesis in Statistics and at least twelve hours to be selected from approved third group courses in Statistics. The remaining twelve hours must be selected in consultation with the adviser.

Doctor of Philosophy.—See the Graduate Council Catalogue.

Bachelor of Business Administration or *Master of Business Administration with a major in Business and Economic Statistics*.—See the School of Government, Business, and International Affairs Catalogue.

FIRST GROUP†

51 *Introduction to Business and Economic Statistics* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and pro-

* The Staff of Instruction is for the academic year 1962–63.
† Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

cedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening; summer 1963.)

52 *Mathematics of Finance* (3) The Staff
Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day and evening.)

53 *Introduction to Statistics in Psychology and Education* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening.)

91 *Principles of Statistical Methods** (3) The Staff
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall—evening; spring—day.)

SECOND GROUP

104 *Statistics in Psychology and Education* (3) Bright
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education. Laboratory fee, $9. (Fall—Saturday morning; summer 1963.)

105 *Statistics in Psychology and Education* (3) Bright
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, $9. (Spring—Saturday morning; summer 1963.)

106 *Factor Analysis* (3)
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, $9. (Fall—evening.)

107 *Statistics for Engineers* (3) The Staff
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1963.)

110 *Quality Control Techniques* (3)
Applications of probability and distribution theory to industrial control problems; use of quality control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1964–65 and alternate years.) Johnson

111 *Business and Economic Statistics I* (3)
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)

* Statistics 91 is for Statistics majors, for students in engineering and in the biological and physical sciences.

112 *Business and Economic Statistics II* (3) Johnson
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)

117 *Analysis of Variance I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, $9. (Fall—evening; summer 1963.)

118 *Correlation and the Chi-square Test I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, $9. (Spring—evening.)

122 *Forecasting Principles and Techniques* (3) Johnson
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)

129 *Introduction to Econometrics* (3) Johnson
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)

155 *Introduction to Mathematical Probability* (3) The Staff
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening; summer 1963.)

157–58 *Mathematical Statistics* (3–3) Kupperman
Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)

167 *Theory of Sampling* (3) Bright
Problems of sampling and sample design. Admission by permission of the instructor. (Fall—evening.)

168 *Nonparametric Statistical Inference* (3) Bright
Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (Spring—evening.)

189–90 *Mathematical Probability and Applications* (3–3) Geisser
Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)

193 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Spring—evening.)

194 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of complex variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Fall—evening.)

195–96 *Reading and Research in Statistics* (arr.) The Staff
(Academic year—as arranged.)

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses.

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3) The Staff
In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor. (Not offered 1963–64.)

THIRD GROUP*

207–8 *Operations Analysis* (3–3) Bright
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. Admission by permission of the instructor. (1964–65 and alternate years.)

217–18 *Experimental Design* (3–3)
Advanced theory of the applications of the linear and other hypotheses to experimental design. (Academic year—evening.)

257–58 *Advanced Mathematical Statistics I* (3–3) Greenhouse
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Academic year—evening.)

259–60 *Advanced Mathematical Probability* (3–3) Kullback
Modern theories and asymptotic laws: elementary theory of definite integration; limit theorems in probability. (Academic year—evening.)

261–62 *Information Theory for Engineers* (3–3)
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure-theoretic). Measures of information, entropy, and their properties Discrete stochastic sources, message ensembles. The transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1964–65 and alternate years.)

263–64 *Advanced Mathematical Statistics II* (3–3) Kupperman
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Academic year—evening.)

265–66 *Multivariate Analysis* (3–3) Geisser
A year course, credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)

267–68 *Characteristic Functions* (3–3)
A year course, credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1964–65 and alternate years.)

269 *Sequential Testing* (3)
(1964–65 and every third year.)

270 *Statistical Decision Theory* (3) Kullback
(1964–65 and every third year.)

271–72 *Statistical Information Theory* (3–3)
A year course, credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison or experiments. (Academic year—evening.)

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses.

273–74 *Stochastic Processes* (3–3) Kullback
A year course, credit is not given for the first half until the second half is completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff
Admission by permission of the instructor. (Academic year—as arranged.)

297 *Seminar: Problems in Mathematical Statistics* (3)
(1963–64—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, Engineering Administration, and Health Care Administration.

101–2 *Basic Principles of Statistical Methods* (3–3)
Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.

119 *The Bases of Statistical Decision Making* (arr.)
Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3)
Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses.

250 *Managerial Statistics and Quality Control* (3)
The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization. Prerequisite: Statistics 107 or the equivalent.

ZOOLOGY*

Professors I. B. Hansen *(Chairman)*, Edith Mortensen, S. C. Munson
Professorial Lecturer K. C. Kates
Associate Professor A. H. Desmond
Lecturer J. R. Buchheit

Bachelor of Arts or *Bachelor of Science (Field of Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Biology 1–2 and Chemistry 11–12.
Required: the general requirements, pages 38–41, and the grade "pass" on the Zoology

* The Staff of Instruction is for the academic year 1962-63.

major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) classification, structure, and ecological relations of animals, both invertebrate and vertebrate; (2) embryological development and life histories of important animal types; (3) general principles of physiology, heredity, and evolution; (4) the development of biological principles, hypotheses, and theories as revealed in the study of the history of zoology.

Bachelor of Arts or *Bachelor of Science with a major in Biology (Departmental).*—This interdepartmental major may be arranged in conjunction with the Department of Botany. Prerequisite: the Arts and Letters or the Science curriculum, respectively, pages 31–32, including Biology 1–2*, or the equivalent.

Required: in addition to the general requirements, pages 38–41, a minimum of twenty-four semester hours of second group courses which should include at least 6 hours in Botany, 6 in Zoology, and 6 in interdepartmental courses.

Master of Arts or *Master of Science in the field of Zoology.*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Zoology or Biology.

Required: the general requirements, pages 43–46.

Master of Arts or *Master of Science in the field of Biology.*—This interdepartmental field may be arranged in conjunction with the Department of Botany. Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Zoology, Botany, or Biology.

Required: the general requirements, pages 43–46.

Doctor of Philosophy (in a field of Zoology or Biology).—See the Graduate Council Catalogue.

Bachelor of Arts in Education with a teaching field in Biology.—Prerequisite: the Education curriculum, pages 33–34.

Required: the Biology option and the professional courses listed in the School of Education Catalogue.

BIOLOGY†

FIRST GROUP

The Staff

1–2 *Introductory Biology**† **(4–4)**

An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences* (4): fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences* (4): fall and spring—day and evening; summer 1963.)

ZOOLOGY

SECOND GROUP†

Mortensen

101–2 *Invertebrate Zoology* **(3–3)**

Lecture (1 hour), laboratory (4 hours). A systematic study of invertebrate forms, including the morphology, classifications, life histories, and phylogenetic relationships. Material fee, $8 a semester. (1963–64 and 1964–65: academic year—day; 1965–66: academic year—evening.

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

† Biology 1–2 is prerequisite to all second-group courses in Zoology, except by permission of the instructor.

103–4 *Comparative Vertebrate Anatomy* (3–3)
Lecture (1 hour), laboratory (4 hours). Lectures on the organ systems of the vertebrates, laboratory dissections of types. Material fee, $11 a semester. (1963–64: academic year—day; 1964–65: academic year—day and evening.)

108 *Organic Evolution** (3) Munson
Theories of organic evolution and present ideas on the principle lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: academic year—day; 1964–65: academic year—evening.)

115–16 *Cytology** (3–3) Desmond
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

127 *Genetics** (3) Stewart
A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

140 *Cell Physiology** (3) Shropshire
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

145 *Introduction to Vertebrate Embryology* (3) Hansen
Lecture (1 hour), laboratory (4 hours). Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, $11. (1963–64 and alternate years: fall—day and evening; 1964–65 and alternate years: fall—day.)

148 *Histology* (3) Desmond
Lecture (1 hour), laboratory (4 hours). Introduction to the microscopical anatomy of normal tissues and organs. Material fee, $11. (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day; summer 1963.)

152 *Protozoa* (3) Mortensen
Lecture (1 hour), laboratory (4 hours). Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Material fee, $8. (1963–64 and alternate years: spring—evening.)

155 *Parasitology* (3) Kates
Lecture (1 hours), laboratory (4 hours). An introduction to the study of animal parasitology, with a survey of parasitic types from the protozoa through arthropods. Material fee, $11. (1963–64 and alternate years: fall—evening.)

161 *Entomology* (3) Munson
Lecture (1 hour), laboratory (4 hours). A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Material fee, $8. (1963–64 and alternate years: fall—evening.)

162 *Insect Physiology* (3) Munson
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, $11. (1963–64 and alternate years: spring—evening.)

171–72 *Special Problems* (3–3) The Staff
Written approval of the instructor is required. Material fee, $11 a semester. (Academic year—as arranged.)

190–200 *Proseminar* (3–3) The Staff
Designed to correlate and supplement the work of Zoology majors. (Academic year—day and evening.)

* See footnote (*) on page 154.

THIRD GROUP

201–2 *Seminar: Cytology** (3–3)
A study of the current literature in experimental cytology. (Not offered 1963–64.)

204 *Seminar in Invertebrate Zoology* (3) Mortensen
A study of original publications on hormones of invertebrate animals. (1964–65 and alternate years.)

214 *Advanced Invertebrate Zoology* (3) Mortensen
Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 101–2 or the equivalent. Material fee, $8. (Not offered 1963–64.)

247–48 *Morphogenesis* (3–3) Hansen
Lectures and class reports on experimental morphology. Prerequisite: Zoology 103–4 or the equivalent. (1964–65 and alternate years.)

251 *Seminar in Vertebrate Zoology* (3) Desmond
A study of current publications in the field of histophysiology. (1963–64 and alternate years: fall—evening.)

295–96 *Research* (arr.) The Staff
Investigation of special problems. (Academic year—as arranged; summer 1963—Zoology 295 (3).)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963—Zoology 299 (3).)

COURSES FROM OTHER DEPARTMENTS

The following courses are of interest chiefly to the preprofessional student who expects to take his upper-division work in one of the professional units of the University and to the student who seeks a two-year terminal degree (Associate in Arts or Associate in Science). Such professional credits do not normally count toward a Bachelor's degree from Columbian College of Arts and Sciences, but a student may, by prior petition, elect up to twelve hours of such work, with the exclusion of Secretarial Studies, which can count only for the terminal degree in that subject.

AIR SCIENCE

Commission in the United States Air Force Reserve.—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Air Force ROTC course of instruction prescribed by law and regulations, the graduate will be appointed Second Lieutenant, United States Air Force Reserve.

BASIC COURSE The Staff

1–2 *Leadership Laboratory—Freshman Year* (1–1)
Cadet basic airman training. Military courtesy, discipline, appearance and bearing; element, flight squadron, and mass formation drill; parades and ceremonies; the mil-

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

itary mission and the problem of national security. Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3. (May be substituted for Physical Education 1–2.) (Academic year—day.)

11–12 *Leadership Laboratory—Sophomore Year* (1–1) The Staff

Cadet noncommissioned officer training. Military bearing and courtesy, all phases of drills and ceremonies, command voice training and command responsibility. Prerequisite: Air Science 1–2, 21–22 for men and Air Science 1–2 for women. Political Science 1 or 9 is recommended as an elective during the sophomore year. Minimum 15 hours a semester. Laboratory fee, charged one time a year, $3. (May be substituted for Physical Education 11–12.) (Academic year—day.)

21 *Air Science—Freshman Year* (2 or 3)

Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical and natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science as meeting the pre-commission officer educational requirements. (Fall.)

22 *Foundations of Aerospace Power—Freshman Year* (2) Garrell

An introductory examination of the factors of aerospace power, major ideological conflicts, requirements for military forces in being, responsibilities of citizenship, development and traditions of the military profession, role and attributes of the professional officer in American democracy, organization of the armed forces as factors in the preservation of national security, and the United States Air Force as a major factor in the security of the free world. (Spring: 2 hours a week—day.)

51 *Fundamentals of Aerospace Weapon Systems—Sophomore Year* (2) Garrell

An introductory survey of aerospace missiles and craft, and their propulsion and guidance systems; target intelligence and electronic warfare; nuclear, chemical, and biological warhead agents; defensive, strategic, and tactical operations; problems, mechanics, and military implications of space operations; and a survey of contemporary military thought. (Fall: 2 hours a week—day.)

52 *Air Science—Sophomore Year* (2 or 3)

Any 2 or 3 semester hour introductory college course in the areas of mathematics, physical or natural sciences, foreign languages, the humanities or social sciences approved by the Division of Air Science as meeting the pre-commission officer educational requirements. Political Science 1 or 9 is recommended as an elective during the sophomore year. (Spring.)

ADVANCED COURSE

101–2 *Air Science—Junior Year* (1–1)

Air Force officer development. Knowledge and skills required of a junior officer in the Air Force. This includes the Air Force commander, his staff, and the air base; the military justice system; and preparation for summer training. Prerequisite or concurrent registration: one 3 semester hour college course, each semester, approved by the Division of Air Science. (Academic year—day.)

103–4 *Leadership Laboratory—Junior Year* (Credit is a part of Air Science 101–2) The Staff

Cadet noncommissioned officer and officer training. Wearing of the uniform, parades and ceremonies, commands and command voice. Cadets perform duties involving planning for and supervision of Cadet Corps activities. Emphasis placed on leadership and management proficiency. Minimum 15 hours a semester. (Academic year—day.)

105 *Summer Training Unit—Between Junior and Senior Years* (required) The Staff

Attendance at a four-week Air Force ROTC summer training unit at an Air Force base within continental United States is mandatory. Program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training.

151–52 *Air Science—Senior Year* (1–1)

First half: weather and navigation. A study of the weather and navigational aspects of airmanship, such as temperature, pressure, air masses, precipitation, weather charts, and dead reckoning navigation. *Second half:* the Air Force officer. A study of materials to help the cadet make a rapid effective adjustment to active duty as an officer of the United States Air Force. Prerequisite or concurrent registration: one 3 semester hour college course, each semester, approved by the Division of Air Science. Only pilot candidates need take weather and navigation. Others may substitute any college course approved by the Division of Air Science. (Academic year—day.)

The Staff

153–54 *Leadership Laboratory—Senior Year*

(Credit is a part of Air Science 151–52)

Cadet officer training. Cadet officers conduct activities of Corps of Cadets through chain of command, instruct subordinates, plan and supervise Cadet Corps training and administration. Preparation for commissioned officer duties. Development of leadership and managerial responsibilities. Minimum 15 hours per semester. (Academic year—day.)

GOVERNMENT AND BUSINESS

ACCOUNTING

1–2 *Introductory Accounting* (3–3)

Kennedy and Staff

First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

101 *Cost Accounting* (3)

Eaton

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; and analysis and interpretation of cost data. Prerequisite: Accounting 1–2. (Fall—day and evening; spring—day; summer 1963.)

111 *Financial Statement Analysis* (3)

Kennedy, Steele

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—day; spring—evening; summer 1963.)

121–22 *Intermediate Accounting* (3–3)

Gallagher, Simpson

First half: valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening.)

161 *Income Tax Accounting* (3)

Kurtz

Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1–2. (Fall—day and evening.)

171 *Auditing* (3)

Kurtz

Duties and responsibilities of auditors; principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22. (Fall—evening.)

181 *Accounting Systems* (3) Lewis
Theory and procedure of designing and installing accounting systems, for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–22, and 171, or permission of the instructor. (Fall—evening.)

191 *Advanced Accounting* (3) Kurtz, Simpson
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. (Fall—evening; summer 1963.)

193 *Business Budgeting* (3) Lewis
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

BUSINESS ADMINISTRATION

131 *Business Finance* (3) Page, Clayton
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening.)

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Collins, McClure
(Fall—day and evening.)

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) Collins, Murphy
(Spring—day and evening.)

PHYSICAL EDUCATION FOR MEN

1-2 *Freshman Physical Education* (1–1) The Staff
Two periods of supervised activity a week. Physical Education fee,* $4.50 a semester. (Academic year—as arranged.)

11-12 *Sophomore Physical Education* (1–1) The Staff
Two periods of supervised activity a week. Physical Education fee,* $4.50 a semester. (Academic year—as arranged.)

41 *Personal Health* (1) Krupa
Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring—day.)

43-44 *Techniques of Physical Education Motor Activities* (2–2) DeAngelis, Krupa
Fundamental skills, rules, and organization. Physical Education fee,* $4.50 a semester. (Academic year—day.)

45-46 *Teaching Individual and Dual Sports in Secondary Schools* (2–2) Hanken, Krupa
Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee,* $4.50 a semester. (Academic year—day.)

47 *Introduction to Physical Education* (2) Myers
An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Fall—day.)

* The Physical Education fee is required for registration in one or more of the activity courses.

49 *Human Anatomy* (3) Stallings
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2†. (Fall—day.)

50 *Kinesiology* (3) Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2†. (Spring—day.)

PHYSICAL EDUCATION FOR WOMEN

1–2 *Freshman Physical Education* (1–1) The Staff
One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each semester.

Fundamentals of health and physical education: study of the factors involved in the general maintenance of health, efficient use of the body, and fundamentals of movement.

Activities: badminton, basketball, body mechanics, field hockey, recreational dance, golf, fencing, modern dance, skating, swimming, synchronized swimming, tennis, softball, lifesaving. Physical Education fee,* $4.50 a semester. (Academic year—fundamentals of health and physical education—day; activity—day.)

11–12 *Sophomore Physical Education* (1–1) The Staff
Two periods a week chosen from the activities offered each season as listed under Physical Education 1–2. Physical Education fee,* $4.50 a semester. (Academic year: two periods a week—day.)

43–44 *Techniques of Physical Education Motor Activities* The Staff
(2 to 3–2 to 3)
Fundamental skills of selected physical education activities. Physical Education fee,* $4.50 a semester. (Academic year—as arranged.)

49 *Human Anatomy* (3) Stallings
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2†. (Fall—day.)

50 *Kinesiology* (3) Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

51–52 *Teaching Physical Education Activities* (2 to 3–2 to 3) The Staff
Team sports: basketball, hockey, softball, soccer, speedball. Individual and dual sports: tennis, badminton, archery, swimming, and diving. Gymnastics: tumbling, apparatus and trampoline. Physical Education fee,* $4.50 a semester. (1963–64 and alternate years: academic year—day.)

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* The Physical Education fee is required for registration in one or more of the activity courses.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

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*Nominated by the alumni.

*OFFICERS OF ADMINISTRATION**

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Claud Max Farrington, A.M., *Assistant to the President, for Special Projects*
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John Francis Latimer, Ph.D., *Associate Dean of Faculties; University Marshal*
William Parkhurst Smith, Jr., A.B., M.B.A., *Assistant to the Dean of Faculties, for Planning*
Henry William Herzog, B.S., *Vice President and Treasurer*
John Anthony Brown, A.M., L.H.D., LL.D., *Vice President for Plans and Resources*

Paul Vernon Bissell, Ph.D., *Dean of Men; Director of Veterans Education*
Richard Bernard Castell, A.B., M.D., *Director of Health Services*
Charles William Cole, Ph.D., *Dean of the Summer Sessions*
Alan Thomas Deibert, A.M., *Adviser to Students from Foreign Countries*
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Frederick Russell Houser, A.M., *Registrar*
William David Johnson, B.S. in B.A., *Comptroller*
Virginia Randolph Kirkbride, A.M., Ed.D., *Dean of Women*
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James Cecil King, Ph.D., *Assistant Dean in Columbian College of Arts and Sciences*
Joseph Louis Metivier, Jr., A.M., *Adviser to Special Students in Columbian College of Arts and Sciences*

* For the academic year 1962–63.

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington.

The purpose of The George Washington University expressed in the words of the Bill of Incorporation, introduced and subsequently enacted by Congress in 1821, was to realize "the aspirations of Washington, Jefferson, and Madison, for the erection of a university at the seat of the Federal Government." This central idea of a university functioning in the Capital of the Nation, nonsectarian, free of sectional limitations, conscious of its wide American relationships, and open to the ever-increasing international influences which bear upon it, has been continuous through nearly a century and a half.

The purpose of this University, therefore, has been to develop the university ideal in the place of greatest national significance, flexible before the changing needs of its growing national constituency and loyal to the traditional principles of learning and research, in providing through disciplined reason, wisdom for the individual and his society.

The University as it is now organized consists of Columbian College of Arts and Sciences; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional school of Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board. The Department of Chemistry is on the approved list of the American Chemical Society.

LOCATION

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the Departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

EDUCATIONAL FACILITIES

Buildings, grounds, and equipment are valued at approximately $27,000,000.

The buildings of Columbian College of Arts and Sciences; the Graduate Council; the National Law Center; the Law School and the Graduate School of Public Law; the School of Engineering and Applied Science; the School of Pharmacy; the School of Education; the School of Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; the University Hospital and Clinics; and the University Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and C Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

John Quincy Adams Hall, 730 Nineteenth Street. Residence hall for men.

Bacon Hall, 2000 H Street. Named in honor of the late Joel Smith Bacon, President of the University from 1843 to 1854. Offices of the Dean of the Graduate Council, the Dean of the Graduate School of Public Law, the Dean and Assistant Dean for Sponsored Research, the Assistant to the President (Special Projects), the Development Division, the Management Research Group, the Educational Counselor. Offices and lounge for the Law Faculty; the Alumni Office; Alumni Reception Room.

Binney Hall, 2018 Eye Street. Named in honor of the late Joseph Getchell Binney, President of the University from 1855 to 1858. Offices, classrooms, and laboratories of the Reading Clinic.

John C. Calhoun Hall, 2100 Eye Street. Residence hall for men.

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Vice President and Treasurer, the Cashier, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

William H. Crawford Hall, 2119 H Street. Residence hall for women.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Everglades Apartments, 2223 H Street. Residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2010–12 H Street.

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean and the Assistant Dean of the School of Government, Business, and International Affairs; the departments of Economics, Government and Business, History, Political Science, and Statistics. Offices of the Air Force Advanced Management Program, Air Force Military and Economics Program, and Navy Graduate Financial Management Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations; lounges, reading rooms.

Health Care and Hospital Administration Building, 816 Twenty-first Street. Offices and seminar rooms of Health Care, Hospital Administration, and Nursing Home Administration programs.

Hospital and Clinics, Washington Circle.

Hospital Staff Office Building, 818 Twenty-second Street.

International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, the Speech Clinic, and the housing officer; Athletic Ticket Office.

Dolly Madison Hall, 736 Twenty-second Street. Residence hall for women.

James Monroe Hall, 2115 G Street. Offices of the deans of Columbian College of Arts and Sciences, the Division of University Students, the School of Education; the departments of Education, English (English and American Literature), Germanic Languages, Journalism, Mathematics, Psychology, and Secretarial Studies; classrooms.

Office of the President, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Administrative Secretary, Assistant to the Dean of Faculties for Planning, and department of Classical Languages.

Placement Office, 2114 G Street.

Samson Hall, 2036 H Street. Named in honor of the late George Whitefield Samson. President of the University from 1859 to 1871. Comptroller's Office; Disbursing Office; offices of the departments of Chemistry, Geology, and Physics.

School of Medicine, 1335–1339 H Street. Offices of the Dean, Associate Dean, School of Medicine Admissions, and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; Medical Alumni Association; and University Medical Bookstore.

Sorority Halls:

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.

2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.

2131 G Street. Apartment of Delta Gamma Sorority.

2137 F Street. Apartment of Alpha Epsilon Phi Sorority.

802 Twenty-first Street. Apartment of Phi Sigma Sigma Sorority.

Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project.

Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Law School; offices of the National Law Center and the Dean, Associate Dean, and Faculty of the Law School; library; and lecture halls.

Hattie M. Strong Hall, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University. Residence hall for women.

Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.

Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of the late Charles H. Tompkins, former Trustee of the University. Offices of the Dean, Assistant Deans, and Faculty of the School of Engineering and Applied Science; the classrooms and laboratories; The Center for Measurement Science; Electronics Research Project; Computer Research Project, National Aeronautics Space Administration; Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.

University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.

University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The library, rooms of the Board of Trustees, Faculty Conference Room, classrooms, office of the Dean of the National Law Center.

The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of The George Washington University Cancer Clinic.

Welling Hall, 814 Twenty-second Street. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894. Residence hall for men.

Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Offices of the Dean of Women and College of General Studies Admissions; meeting rooms for student activities.

Building A, 2026 G Street. Offices of the Department of Romance Languages.

Building A-1, 2129 Eye Street. Offices of the Computer Programs Research Project and Area Redevelopment Project.

Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.

Building B-2, 2204 Eye Street. Offices and laboratories of the Medical Instrumentation Project.

Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Botany, Geology, and Zoology; language laboratories; classrooms.

Building C-3, 2035 H Street. Offices of the Center for Behavorial Sciences and Faculty offices.

Building D, 2013 G Street. Offices of the Business Manager, Maintenance; Mail Room.

Building E, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Assistant to the Dean of Faculties for Planning, and Administrative Secretary; office of the Department of Classical Languages.

Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies.

Building G, 712 Twentieth Street. Offices of the Department of English (Composition section); Academic Editor.

Building H, 714-16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.

Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography and Regional Science.

Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.

Building K, 817 Twenty-third Street. Classrooms, playing court, locker rooms, and office of the Department of Physical Education for Women.

Buildings M and N, 716–18 Twenty-first Street. Offices of the departments of Slavic Languages and Philosophy; offices and laboratories of the Testing and Counseling Center.

Building O, 2106 G Street. Offices of the Department of Religion and University Chapel.

Building P, 2108 G Street. Offices of the Student Health Services, Adviser to Special Students in Columbian College, and of the University Historian.

Building Q, 2029 H Street. Offices of the Dean of Men, the Director of Veterans Education, and the Plant Engineer.

Building R, 2027 H Street. Offices of the Director of Athletics, and the Athletic Staff.

Building S, 2025 H Street. Offices of the Department of Physical Education for Men and Public Relations.

Building T, 2110 G Street. Offices of the Dean of the Summer Sessions; Chairman of Committee on Scholarships; International House (see International House).

Building U, 729 Twenty-second Street. Driver Behavior Research Project.

Building V, 2114 H Street. Research laboratories of the Department of Physics.

Building W, 2128 H Street. Offices of the Dean and Faculty of the School of Pharmacy; pharmacy laboratories; classrooms.

Building X, 2107 H Street. Offices of the departments of Art and Sociology and Anthropology; Music Program; Population Research Project; Faculty offices.

Building Y, 802 Twenty-first Street. Offices of the Department of Government and Business

Building Z, 708 Twenty-second Street. Offices of the Patent, Trade-Mark, and Copyright Foundation.

2120 Eye Street. Office of the Vice President for Plans and Resources.

LIBRARY FACILITIES

The Library collections of the University are housed in the University Library and in the departmental libraries of law and medicine.

These collections contain approximately 371,000 volumes—285,000 in the University Library, 60,000 in the Law Library, and 26,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 2,100 periodicals.

Information concerning the use of the Libraries may be obtained at the Library

service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibits are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

FACULTY AND STAFF OF INSTRUCTION

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ROBERT WHITNEY BOLWELL, Ph.D., Litt.D., *Professor Emeritus of American Literature*
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Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Master of International Affairs, (M.I.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), Master of International Affairs (M.I.A.), and Master of Public Administration (M.P.A.)

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General Catalogue of the University.....Director of Admissions
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School of Education.....Director of Admissions
School of Engineering and Applied Science.....Dean of the School
School of Government, Business,
and International Affairs.....Director of Admissions
School of Medicine.....Admissions Office, School of Medicine
Summer Sessions.....Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters.....Registrar
Schedule of Classes: Summer Sessions.....Dean of the Summer Sessions

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THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

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THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY STUDENTS, 1930

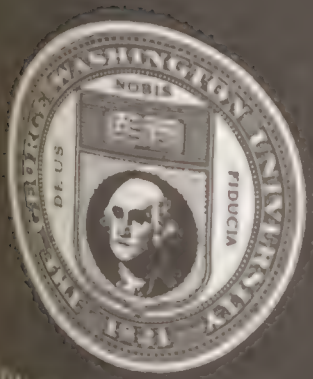
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THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

The George Washington University

Bulletin



THE SCHOOL OF BUSINESS, AND AFFAIRS GOVERNMENT, INTERNATIONAL 1963-64

WASHINGTON 6, D. C.
APRIL 1963
Vol. LXII No. 10

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

Admission ..... Director of Admissions, Building C

School of Medicine ..... 1339 H Street NW.

Air Science (ROTC) ..... Director of Air Science, Chapin Hall

Alumni Association ..... Alumni Office, Bacon Hall

Medical Alumni Association ..... 1335 H Street NW.

Foreign Students ..... Adviser to Foreign Students, Building T

Graduate Study

In Arts and Sciences

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Doctor of Philosophy ..... Dean of The Graduate Council

In Education ..... Dean of The School of Education

In Engineering or Applied Science ..... Dean of The School of Engineering and Applied Science

In Law ..... Dean of The Graduate School of Public Law

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Bulletin

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GOVERNMENT, BUSINESS,
AND INTERNATIONAL AFFAIRS
1963-64

VOLUME LXII

APRIL 1963 NUMBER 10

1963

July

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THE CALENDAR 1963-64

FALL SEMESTER:

Orientation Assembly: all new students	Sept 13	Fri
Curriculum assemblies: new students attend one	Sept 13 and 16	Fri and Mon
Placement tests	Sept 16	Mon
Advising	Sept 16–18	Mon–Wed
Registration	Sept 19–21*	Thurs–Sat
Application for Feb graduation due in Registrar's Office		
Classes begin	Sept 23	Mon
Veterans Day (holiday)	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
D.B.A. dissertations of Feb candidates due in Dean's Office	Dec 2	Mon
Graduate Record Examination	Dec 14	Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
Classes resume	Jan 2	Thurs
Master's theses of Feb candidates due in Dean's Office	Jan 2	Thurs
Last day of fall-semester classes	Jan 15	Wed
Examination period	Jan 20–25	Mon–Sat

SPRING SEMESTER:

Advising	Jan 20–29	Mon–Wed
Registration	Jan 30–Feb 1*	Thurs–Sat
Application for June graduation due in Registrar's Office		
Spring-semester classes begin	Feb 3	Mon
Subjects of Master's theses of June candidates due in Dean's Office	Feb 7	Fri
Winter Convocation (holiday)	Feb 22	Sat
Spring recess	March 25–31	Wed–Tues
D.B.A. dissertations of June candidates due	April 1	Wed
Graduate Record Examination	April 11	Sat

* Thursday and Friday, 12:00 to 8:00 P.M.; Saturday 10:00 A.M. to 1:00 P.M.

Master's theses of June candidates due in Dean's Office	May 1	Fri
Last day of spring-semester classes	May 20	Wed
Examination period	May 23–29	Sat–Fri
Memorial Day (holiday)	May 30	Sat
Baccalaureate Service	June 7	Sun
Commencement	June 7	Sun

SUMMER SESSIONS:

Registration for eight-week term	June 22	Mon
Classes begin	June 23	Tues
Independence Day (holiday)	July 4	Sat
Eight-week term ends	Aug 14	Fri

REGISTRATION FOR FALL SEMESTER

1964–65	Sept 17–19	Thurs–Sat

SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS

INTRODUCTORY

The School of Government, Business, and International Affairs was established in 1898 as the School of Comparative Jurisprudence and Diplomacy. In 1928 it was reorganized and broadened as the School of Government. During the next two decades the scope of the School broadened further with the addition of programs in business administration and public administration. In the same period the School gradually changed from primary emphasis on undergraduate study to emphasis on graduate work. In 1960 the name was changed to the School of Government, Business, and International Affairs.

The School offers undergraduate and graduate programs in various fields of Accounting, Business Administration, Business and Economic Statistics, International Affairs, and Public Affairs. Students in the freshman and sophomore years are registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University. Here they are assigned special advisers to assist them in planning their programs. Graduate work only is offered in the fields of Economic Policy, Health Care (including Hospital) Administration, Personnel Administration, and Public Administration.

OBJECTIVES

The School of Government, Business, and International Affairs offers programs to prepare men and women for careers in the conduct of international affairs, as well as programs to equip students for eventual senior administrative responsibility in business and government. The development of mid-career programs for executives has become a further objective of national significance.

The School was reorganized in 1960 in recognition of the growing interdependence of business and government at both the national and international levels. The programs in Government and Business include examination of administrative principles and the quantitative approaches to decision-making common to both business and government. These programs stress the points at which major policy decisions of either business or government must give consideraiton to related policy decisions of the other. Emphasis is placed upon the fact that management education is not limited to organizational techniques, but is, in its broadest sense, education for management responsibility.

International Affairs is an area of higher education in which programs have been offered by the School of Government, the predecessor of the present School, since its inception. These programs, based on the fundamentals of economics, history, politics, and law, also give recognition to the international impact of American business activity.

ADMISSION

The University accepts both men and women. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone: FE 8-0250, extension 344. The application for admission, with a $15 application fee and a recent, signed photograph, should be returned to the Office of the Director of Admissions.

Application for admission or readmission for degree candidacy, together with all required credentials, should be received by July 1 for the fall semester, January 1 for the spring semester, or May 1 for the Summer Sessions to insure consideration.

No application will be considered after September 1 for the fall semester, January 10 for the spring semester, or June 1 for the Summer Sessions except in extraordinary circumstances, at the discretion of the Director of Admissions.

An applicant who has attended one or more institutions of higher learning must request each registrar to mail directly *to the Office of the Director of Admissions* a transcript of his record, *even though credits were not earned.* If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Office of the Director of Admissions.

ADVANCED STANDING

CREDIT FROM HIGHER INSTITUTIONS

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University. It may be allowed provisionally, and it may be withdrawn for subsequent poor work. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

The student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of the Director of Admissions. If he applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University,

he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

ENTRANCE REQUIREMENTS

Good character and an academic background appropriate for the program of studies contemplated are required.

FOR THE BACHELOR'S DEGREES

Bachelor of Arts in Government.—The satisfactory completion of the *International Affairs* or *Public Affairs* curriculum in the lower division of Columbian College of Arts and Sciences (see page 25), or the equivalent.

Bachelor of Business Administration.—The satisfactory completion of the *Accounting and Business Administration* or the *Business and Economic Statistics* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 27 and 30), or the equivalent.

FOR THE MASTER'S DEGREES

A Bachelor's degree from an accredited college or university is required.

Students admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in the relevant undergraduate fields.

Master of Arts in Government

In the field of Public Administration.—An undergraduate major in a social science or business administration, or equivalent work experience.

In the field of Public Affairs.—An undergraduate major in public affairs, economics, history, or political science, depending on the field of specialization.

In the field of International Affairs.—The applicant's undergraduate program should include background courses corresponding to an undergraduate major in international affairs at this University.

In the field of Economic Policy.—An undergraduate major in economics at this University, or the equivalent.

In the field of Business and Economic Statistics.—An undergraduate major in business and economic statistics, or the equivalent.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

Master of Business Administration

In the field of Accounting or *Business Administration.*—A Bachelor's degree from an accredited college or university.

In the program of automatic data processing appropriate courses in mathematics are required.

In the field of Health Care (including Hospital) Administration.—A Bachelor's degree from an accredited college or university is required. In the selection of can-

didates consideration will be given to personal qualifications, aptitude for health care administration, and practical experience.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

Master of Public Administration

In the field of Public Administration.—A Bachelor's degree from an accredited college or university.

In the field of Personnel Administration.—An undergraduate major in a social science or education, with appropriate courses in psychology.

FOR THE DOCTOR'S DEGREES

Doctor of Business Administration.—The degree of Master of Business Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examination in statistics and accounting.

Doctor of Public Administration.—The degree of Master of Public Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examination in two tools of research, chosen as the program dictates.

REGISTRATION

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions.

A student previously registered in the University who was not registered on campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of Admissions.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration.* Allowance of credit for work done concurrently at another institution will be at the discretion of the appropriate Dean's Council.

IN RESIDENCE REGISTRATION

A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his return unless during his absence he maintains "in residence" status by paying the appropriate fee, see page 12. For the purpose of this regulation the summer term will be disregarded.

The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

TIME AND PLACE OF REGISTRATION

Registration is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester*, September 19 and 20, from 12:00 to 8:00 P.M.; September 21, from 10:00 A.M. to 1:00 P.M. *Spring semester*, January 30 and 31, from 12:00 to 8:00 P.M.; February 1, from 10:00 A.M. to 1:00 P.M.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted, effective for the academic year 1963–64.

Tuition Fees

For undergraduate and Master's study

Full-time program (12 to 18 hours), each semester*	$550.00
Part-time program or hours in excess of 18, for each semester hour*	36.00

For the degree of Doctor of Business Administration or Doctor of Public Administration

For work† leading to and including the General Examination	1,200.00
For work leading to and including the Final Examination	1,200.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Special Fees

Application fee (degree candidate), nonrefundable	15.00
Application for room reservation fee (see page 46)	100.00
Admission tests (when required)	
For Binding Master's Thesis	6.00–12.00
For Printing Summary of Doctoral Dissertation	6.00
	85.00

* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered "in residence" during this period. If the preparation of the thesis extends beyond the second academic year, it must be registered for credit, and tuition paid on the same basis as for a repeated course.

† This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100).

Graduation fee	25.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree at the time of registration for the final semester of study (excluding summer sessions)	10.00
Late-registration fee, for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee, to maintain "in residence" status during any semester or absence from the University or after completion of tuition requirements.* Due and payable on the official days of registration	36.00
For each examination to qualify for advanced standing and for each special examination	5.00
English test for foreign students (when required)	5.00
Transcript fee, for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library; (4) gymnasium privileges; (5) admission to all athletic contests unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Services. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

The student may sign a contract at the time of each registration for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day† in November; one-third on the first working day† in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day† in March; one-third on the first working day† in April.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

A student who fails to meet payments when due, but pays his fees within the following two weeks of the date on which payment is due, is charged a $2 service fee. A student who fails to meet payments within these two weeks after payment is due is automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

* Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

† The University work week is Monday through Friday, inclusive.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", page 18).

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition charges other than those involving course fees.

In no case will a refund be made of the first third of the total tuition charges.

In no case will tuition be reduced or refunded because of nonattendance upon classes.

* The University work week is Monday through Friday, inclusive

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Students enrolled in the ROTC who fail to turn in uniforms, equipment, and textbooks, on separation from the Corps, are charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS, GRADUATE SCHOLARSHIPS, AND ASSISTANTSHIPS

The following fellowships, graduate scholarships, and assistantships are available. Unless otherwise specified, applications should be submitted not later than March 1 preceding the period for which the award is to be made. They should be directed to the chairman of the department or the Dean of the School and addressed to The George Washington University, Washington 6, D. C.

University Teaching Fellowships.—Assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to $2,000 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed $600. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the chairman of the department of instruction concerned.

Graduate Teaching Assistantships.—Open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $2,000 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed $730. Application should be made to the chairman of the department of instruction concerned.

American Security and Trust Company Fellowship (1960).—A two-year fellowship of $2,000 a year is available to a graduate student in business administration or economics in the School of Government, Business, and International Affairs.

Winfield Scott Blaney Fellowship in International Affairs (1961).—Bequest of Jeannette Blaney Strayer in memory of her father. The income from this fund, up to $1,200, is used to provide fellowships for graduate students in a field of international relations, in the School of Government, Business, and International Affairs.

Scottish Rite Fellowships.—The Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction, U.S.A., offers fellowships each in the amount of $2,200, to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs, to train for government leadership—federal, state, or local. The territory includes the Orients of Alabama, Alaska, Arizona, Arkansas, California, Colorado, District of Columbia, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wyoming, Panama, Puerto Rico, and the Bodies of Taiwan, Japan, Okinawa, and Guam.

These fellowships are made possible by annual gifts and are available to residents of the respective states or countries, and application therefore should be made to the Sovereign Grand Inspector General of the Supreme Council, 33°, of the Southern Jurisdiction, U.S.A., of the Orient state or country from which the application is to be made. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

Wolcott Foundation Fellowships.—Sponsored by the Wolcott Foundation of High Twelve International and available to graduates of accredited colleges who wish to enroll in the School of Government, Business, and International Affairs for graduate work in International Affairs, Public Administration, Personnel Administration, or Business Administration. Preference is given to students who themselves are affiliated with, or whose parents are affiliated with, High Twelve International or the Masonic Order. The fellowships cover tuition for one calendar year of graduate study in residence. Where need is shown, a living allowance up to $100 a month may be granted. Direct inquiries to Mr. C. M. Farrington, The George Washington University.

SCHOLARSHIPS AND PRIZES

The following scholarships and prizes are limited to students in the School of Government, Business, and International Affairs. The University offers many others which are open to students in this School. A special bulletin containing a complete list and full information may be obtained from the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded.

Scholarship application should be made in writing on or before April first for the following academic year and, unless otherwise specified, should be addressed to the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C. Awards are made during the month of April. All scholarships begin with the fall semester.

American Society of Women Accountants Scholarship (1953).—Established by the District of Columbia Chapter to provide a partial scholarship for a worthy sophomore, junior, senior, or graduate woman majoring in accounting.

Lula M. Shepard Scholarships (1946).—By bequest, two partial scholarships for "worthy Protestant students" wishing to enroll in the International Affairs program of the School of Government, Business, and International Affairs.

Alpha Kappa Psi Prize.—A key, awarded annually by Beta Mu Chapter to the male student who has completed 90 semester hours at this University and attained the highest average grade in economics, business administration, public accounting, public finance, and foreign commerce. The name of the winner and the year of the award is engraved on a plaque in the Office of the Dean of the School of Government, Business, and International Affairs.

Wilbur J. Carr Prize.—This prize of $200 was established in 1962 by Edith K. Carr, an Honorary Trustee of the University, in memory of her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It will be awarded annually to that man in the graduating class of The George Washington University who has demonstrated outstanding ability in his study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant.

Ernest Connolloy Memorial Award.—Awarded by the Washington Personnel Association to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

John Henry Cowles Prizes.—A first prize of $100 and a second prize of $75, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded annually to the two seniors in the School of Government, Business, and International Affairs with the highest academic averages.

Morgan Richardson Goddard.—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C. Awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

FINANCIAL AID

STUDENT EMPLOYMENT

Graduate and undergraduate student assistantships are available in several departments of the University. Application should be made to the chairman of the department of instruction concerned.

The Placement Office maintains a registry of positions available in many fields of work and refers qualified applicants for consideration.

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of the University have made available a

fund for short-term loans to students to provide for partial payment of tuition. Application should be made three days prior to the dates on which tuition installments are due.

Kellogg Foundation Hospital Administration Loan Fund.—A fund of $10,000 for loans to full-time graduate students in hospital administration.

National Defense Student Loan Fund.—This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given applicants who express a wish to teach in elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Treasurer no later than (1) for the *fall semester*—June first for students currently registered in the University and July first for entering students: (2) for the *spring semester*—December first: (3) for the *Summer Sessions*—May first.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

For information concerning full- and part-time employment, see "The Placement Office", pages 47–48.

REGULATIONS

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absence.

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

A student suspended for any cause may not attend classes during the period of suspension.

INDEPENDENT STUDY PLAN

A student of *demonstrated capacity*, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an

instructor, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific course credits normally allowed when taken on a class basis.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the School of Government, Business, and International Affairs may be dismissed from the University.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors. For details of grading system see pages 22 and 32.

EXAMINATIONS

Examinations are scheduled at the end of each semester or at the completion of the course.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the appropriate Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations", pages 13 and 14.)

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, of Division.—A student may not change or drop courses (see "Withdrawal", above) or change his status to that of auditor except with the approval of the Dean.

* The University work week is Monday through Friday, inclusive.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements of the course of study to which the change is made must be met.

Transfer within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the lower division of Columbian College in a regular baccalaureate program, application for transfer must be made to the Director of Admissions on the form provided by his office.

Students wishing to transfer from the Division of University Students to a degree-granting college or school of the University should note that a maximum of 45 semester hours will be accepted in transfer.

Students transferring within the University should note that 30 semester hours, including *at least 12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

CREDIT

Credit is given only after registration for a course and satisfactory completion of the required work, or upon the assignment of advanced standing.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. No charge is made for the first copy; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a person who does not have a clear financial record.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year. Students expecting to complete, during the Summer Sessions, requirements for degrees to be conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

In Residence Status.—A student who is absent from the University for one semester or more is required to satisfy the curriculum requirements existing at the time of his return, unless during his absence he maintains "in residence" status by paying the residence fee, see page 12.

The student who has completed tuition requirements, but whose graduation is deferred for any reason must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

Graduate Record Examination.—All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination (see page 12).

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Dissertation.—A thesis or dissertation submitted in partial satisfaction of requirements for a degree, must be presented in its final form to the Dean no later than the date specified in the University calendar. Three complete copies of each are required. It is the responsibility of the candidate for a graduate degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of theses and dissertations, which are rigidly enforced.

Accepted theses or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

Graduation in Absentia.—Application for graduation *in absentia* must be submitted to the Dean.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

CLASSIFICATION OF STUDENTS

A *junior* is a student who has completed between 64 and 94 hours and filed the declaration of his major, approved by his adviser, in the Office of the Dean.

A *senior* is a student who has completed between 94 and 124 hours, including at least 6 hours of second-group work in his major.

A *master in course* is a student who has satisfactorily completed the work for the Bachelor's degree and filed his approved program of study in the Office of the Dean.

A *doctoral candidate* is a student who has been admitted by the Committee on Doctoral Studies in Business Administration and Public Administration.

A *special student* is a student not immediately eligible for unqualified degree candidacy but admitted to the School of Government, Business, and International Affairs to demonstrate ability in a prescribed program or to make up deficiencies.

THE BACHELOR'S DEGREES

The School offers programs leading to (1) the degree of Bachelor of Arts in Government with majors in International Affairs or Public Affairs and (2) the degree of Bachelor of Business Administration with majors in Accounting, Business Administration, and Business and Economic Statistics.

THE REQUIREMENTS FOR THE DEGREES

AMOUNT OF WORK

A full-time student not on probation may not ordinarily take more than 15 semester hours. A student employed more than 24 hours a week, who is not on probation, may not take more than 9 semester hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 18 semester hours. A student employed more than 24 hours a week, whose index is 3.50 or higher, may take up to 12 semester hours.

A student who accepts employment after registration or at any time during a semester must report immediately to the Dean, so that his program may be adjusted if necessary.

Exception to these rules will require the approval of the Dean.

SCHOLARSHIP

In order to graduate, a student must have the following: (1) a general quality-point index of at least 2.00 and (2) an index in his major of at least 2.50. The major includes the required courses and courses taken in the group options.

Grades

The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean or council of the college, school, or division concerned. An "incomplete" which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

The Quality-Point Index

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An "incomplete" which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

Honors

Dean's Honor List.—The names of students who achieve a quality-point index of 3.50 or higher are placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students registered for a minimum of 12 semester hours and (2) part-time students registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include the summer term.

With distinction.—A Bachelor's degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded by the Faculty to the recipient of a Bachelor's degree for outstanding achievement in the major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science 101 and 102 with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at an Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished Cadet" badge above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate."

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for a Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

Probation

A student must maintain a quality-point index of at least 2.00, or be placed on probation, where he remains as long as his index is below 2.00.

Suspension

A student whose index is 1.50 or below, or who is subject to probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the appropriate Dean's Council that during his absence from the University, he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

Residence

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the School of Government, Business, and International Affairs. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Graduate Record Examination

All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The ex-

aminations are conducted by the University twice a year: the Fall Testing Session for seniors graduating in February, and the Spring Session for those graduating in June. Students expecting to complete degree requirements during the summer sessions should take the examination in the Spring Session.

By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools. Dates of the examinations are announced in the Calendar, page 5.

Each senior required to take the Graduate Record Examination must register for it in the office of the Dean when he registers for his final regular semester of study (excluding summer sessions). A $10 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service.

USE OF CORRECT ENGLISH

The use of correct English, oral and written, is required in all courses. Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

CURRICULUM REQUIREMENTS

To be recommended by the Faculty for graduation, candidates are required to complete, in addition to the appropriate freshman and sophomore work, a minimum of 60 semester hours during the junior and senior years, as set forth in one of the following curricula.

Examinations for Waiving Curriculum Requirements

A required course may be waived by the satisfactory passing of a waiver examination authorized and prescribed by the department or curriculum adviser concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Request to take the examination should be made to the curriculum adviser and the required fee paid at the Office of the Cashier before the date set for the examination.

BACHELOR OF ARTS IN GOVERNMENT

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Arts in Government with a major in International Affairs or Public Affairs. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
English	English 1 or 1X, 2	6
Foreign Language		12
Mathematics, Science	Biology 1–2*; Chemistry 3–4; Geology 1–2; Mathematics 3, 6; Physics 11, 12; or Statistics 51, 52	6 to 8
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10	24
Electivet	Students interested in Foreign Service include Geography 52	10 to 12
	Total	64

INTERNATIONAL AFFAIRS

REQUIRED—JUNIOR AND SENIOR YEARS

The International Affairs program is broad, covering international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

		Semester Hours
Econ 181–82	International Economics	6
Hist 181–82	Diplomatic History of the United States	6
Pol Sc 171 or Hist 150	International Politics	
Pol Sc 172	European Diplomatic History since 1878	3
Pol Sc 181–82	International Organization: the United Nations	3
Pol Sc 197	International Law	6
	Proseminar in International Affairs; Strategies of Contemporary American Foreign Policy	3
Foreign Language	Composition and Conversation	6
Geography Group Option		3
Elective	(To be selected from one of the following groups in consultation with adviser)	15
		9
	Total	60

* An interdepartmental course offered by the departments of Botany and Zoology.

† Credit is not given for courses elected in Physical Education or Secretarial Studies.

All International Affairs majors must complete the *required* courses listed above, plus the group option. Group option courses must be selected after consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

Group I—International Politics

Composed of courses in Political Science, History, and Geography concerned with the study of American diplomatic relations.

Group II—International Economics

Composed of courses in Economics, Business Adminstration, Geography, and Statistics concerned with the study of American economic, financial, and business relationships with foreign countries.

Group III—International Communications

Composed of courses in Political Science, Psychology, Sociology and Anthropology, and Journalism concerned with the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations. (It is recommended that the student include statistics in his freshman- and sophomore-year program.)

Group IV—Area or Regional Studies

Composed of courses in Economics, History, Political Science, and Geography. Integrated programs of study are available in the following regions or areas: Europe; Africa and the Middle East; Asia and the Pacific Area; the Soviet Orbit; and Latin America. Modifications and combinations of these areas may be made if approved by the adviser. The foreign language requirement should be met by a language suitable for study of the region or area selected.

PUBLIC AFFAIRS

REQUIRED—JUNIOR AND SENIOR YEARS

The Public Affairs program is a broad, composite curriculum dealing with domestic government and policy.

		Semester Hours
Econ 102	Economic Analysis	3
Econ 121	Money and Banking	3
Econ 161–62	Public Finance and Taxation	6
Hist 175–76	Political and Constitutional History of the United States	6
Pol Sc 121–22	The Constitution of the United States	3
Pol Sc 145	Political Parties and Politics	3
Pol Sc 151	Public Administration	6
Group Option	(To be selected from one of the following groups in consultation with the adviser)	12
Elective		18
	Total	60

All Public Affairs majors must complete the *required* courses listed above. The group options provide specialization. Modifications and substitutions may be made when appropriate or necessary provided the consent of the adviser is obtained.

Group I—Economics Option

		Semester Hours
Econ 101	Economic Analysis	3
Econ 104	History of Economic Thought	3

		Semester Hours
Econ 105	Business Cycles	3
Econ 165	Government Control of Economic Activity	3
	Total	12

Group II—Politics Option

Pol Sc 104	State and Local Governments	3
Pol Sc 111	Introduction to Comparative Government and Politics	3
Pol Sc 120	Foundations of American Democracy	3
Pol Sc 146	Political Pressures and Public Reactions	3
	Total	12

BACHELOR OF BUSINESS ADMINISTRATION

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Business Administration with a major in Accounting or Business Administration. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
Accounting	Accounting 1–2	6
English Composition	English 1 or 1X, 2	6
*Foreign Language or Literature	English 51–52, 71–72, 91–92; French 3–4 or 51–52; German 3–4 or 51–52; Russian 3–4 or 91–92; Spanish 3–4 or 51–52	6
Mathematics	Mathematics 15, 16	6
Science	Biology 1–2†; Chemistry 3–4, 11–12; Geology 1–2 or 1 and 12; or Physics 11, 12	6–8
Social Studies	Economics 1–2	6
	Political Science 9–10	6
	Psychology 1	3
	Anthropology 1, Sociology 2, or Psychology 8	3
Statistics	Statistics 51	3
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Elective‡	(Speech is recommended, students interested in Foreign Commerce include Geography 52)	7–9
	Total	64

ACCOUNTING

Programs are offered in three areas of professional specialization: (1) Managerial Accounting in Business; (2) Federal Financial Management—Accounting and Budgeting; and (3) Public Accounting.

*This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

†An interdepartmental course offered by the departments of Botany and Zoology.

‡Credit is not given for courses elected in Physical Education or Secretarial Studies.

REQUIRED—JUNIOR AND SENIOR YEARS

		Semester Hours
Acct 101	Cost Accounting	3
Acct 121–22	Intermediate Accounting	6
Acct 161	Income Tax Accounting	3
Acct 171	Auditing	3
BA 102	Fundamentals of Management	3
BA 131	Business Finance	3
BA 161	Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3
Econ 121	Money and Banking	3
		30
Area of Professional Specialization		15
Elective	(Exclusive of Accounting courses, not more than 6 hours may be taken in a single department)	15
	Total	60

All Accounting majors must complete the *required* courses listed above, plus one of the following areas of professional specialization. Special programs may be arranged in consultation with the Department of Government and Business.

Group I—Managerial Accounting in Business

Students preparing for careers in managerial accounting in business may specialize in a particular area of accounting, such as systems, cost, budgeting, or tax, or preferably, may concentrate on broadening their backgrounds in business administration or in more general fields of knowledge. The Managerial Accounting in Business Program thus provides maximum flexibility for students who wish to combine basic training in accounting with other career interests, either in preparation for general business responsibilities or in preparation for a more specific career in the financial management field.

	Semester Hours
Courses relating to Managerial Accounting selected with the approval of the adviser (may not include Accounting courses in excess of 9 hours)	15

Group II—Federal Financial Management—Accounting and Budgeting

Students preparing for careers in financial management in the Federal Government may combine basic professional training in accounting with more specialized training in the financial management techniques used in administering the complex affairs of modern-day government. A flexible program can be developed in keeping with the specific career objectives of the individual student by the careful selection of electives.

	Semester Hours
Courses relating to Federal Financial Management to be selected with approval of the adviser (may not include Accounting courses in excess of 9 hours)	15

Group III—Public Accounting

The Public Accounting Program is a concentrated professional curriculum designed to prepare students for careers in public accounting and the Certified Public Accountants examination. It combines the maximum number of professional accounting courses consistent with the broad educational background essential to successful Accounting careers in the modern business world.

	Semester Hours
Courses relating to Public Accounting to be selected with approval of adviser	15

BUSINESS ADMINISTRATION

The program in Business Administration is designed to provide the broad foundation required for eventual top leadership in either governmental or business admin-

stration. The following 30 semester hours are normally required. In addition students take 15 semester hours in one of the group options and 15 hours of electives, which normally are advanced courses in liberal arts subjects.

REQUIRED—JUNIOR AND SENIOR YEARS		Semester Hours
BA 101	Introduction to Business	3
BA 102	Fundamentals of Management	3
BA 105	Personnel Management	3
BA 131	Business Finance	3
BA 141	Basic Marketing	3
BA 161	Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3
BA 198	Case Problems in Management	3
Econ 193	Business Budgeting	3
Econ 121	Money and Banking	3
		30
Group Option (to be selected from one of the following groups)		15
Elective (to be selected in consultation with the adviser)		15
	Total	60

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major provides some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

All Business Administration majors must complete the *required* courses listed above, plus the group option. Selection of group option courses must be made in consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

Composed of courses in Accounting, Business Administration, Economics, and Statistics.

Group II—Personnel

Composed of courses in Business Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

Composed of courses in Accounting, Business Administration, Economics, Political Science, and Statistics.

Group IV—Marketing, Procurement, and Production

Composed of courses in Business Administration, Economics, Geography, and Statistics.

Group V—Controllership

Composed of courses in Accounting, Business Administration, and Economics.

Group VI—Economics

Composed of courses in Economics and Business Administration.

Group VII—Statistics

Composed of courses in Statistics.

Group VIII—Transportation and Public Utilities

Composed of courses in Business Administration, Economics, Geography, History, and Statistics.

Group IX—Automatic Data Processing

Composed of courses in Accounting, Applied Science, Business Administration, Economics, Engineering, Mathematics, and Statistics.

BUSINESS AND ECONOMIC STATISTICS

PREREQUISITE—FRESHMAN AND SOPHOMORE YEARS

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences is required for admission to the School of Government, Business, and International Affairs in candidacy for the degree of Bachelor of Business Administration with a major in Business and Economic Statistics. Freshman and sophomore students are subject to the regulations of Columbian College of Arts and Sciences.

		Semester Hours
Accounting	Accounting 1–2	6
Economics	Economics 1–2	6
English	English 1 or 1X, 2	6
Foreign Language		12
Mathematics	Mathematics 21, 22, 23	9
Physical Education	Students exempt from the physical education requirement will be required to substitute 4 hours of elective	4
Political Science	Political Science 9–10	6
or Philosophy	Philosophy 51–52	6
Statistics	Statistics 51 or 91, 52	9
Elective*		6
	Total	64

REQUIRED—JUNIOR AND SENIOR YEARS

The undergraduate program in Business and Economic Statistics is designed as preparation for business and economic analysis, with 30 semester hours of requirements and 30 semester hours of electives from Accounting, Business Administration, Economics, and Statistics.

		Semester Hours
BA 101	Introduction to Business	3
BA 102	Fundamentals of Management	3
BA 131	Business Finance	3
or 141	Basic Marketing	3
BA 161	Commercial Law: Contracts, Sales, Agency, Bailments	6
BA 162	Commercial Law: Negotiable Instruments, Property, Mortgages	3
Econ 101–2	Economic Analysis	6
Econ 105	Business Cycles	18
Stat 111–12	Business and Economic Statistics I–II	12
Elective (A), (To be selected from Statistics)		6
Elective (B)		3
	Total	60

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

THE MASTER'S DEGREES

Master of Arts in Government

Programs leading to the degree of Master of Arts in Government are offered in the following fields:

Public Administration
Public Affairs
International Affairs
Economic Policy
Business and Economic Statistics
Personnel Administration

Master of Business Administration

Programs leading to the degree of Master of Business Administration are offered in the following fields:

Accounting
Business Administration
Health Care (including Hospital) Administration
Personnel Administration

Master of Public Administration

Programs leading to the degree of Master of Public Administration are offered in the fields of Public Administration and Personnel Administration.

GENERAL REQUIREMENTS

A 3.00 average in the undergraduate major is normally required for admission to graduate study. Deficiency in undergraduate preparation may be satisfied by (1) taking specified undergraduate courses and maintaining a 3.00 average in such courses or (2) passing a comprehensive examination in the major field. The comprehensive examination may be taken only with the Dean's approval upon recommendation of the curriculum adviser.

Master's degrees are awarded by vote of the Faculty concerned on completion of the required course work, an acceptable thesis or the equivalent, and the passing of the comprehensive examination. An applicant whose background does not include the necessary courses or equivalent work experience must take a program longer than the minimum hours required.

In addition to any course examination, the candidate must pass comprehensive written examinations in his major field. These examinations are scheduled two or more times a year (usually in December and in April), and should be taken during the last semester of course registration or shortly after the completion of the prescribed course work. The candidate must consult with his adviser, well in advance, as to the date of his examination and the definition of the subject-matter fields which the examination is to cover. An oral examination on his thesis or major report may also be required.

Second-group courses (numbered 101–200) may be counted toward the Master's degree, only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

All work for a Master's degree must be completed in five years, unless an extension of time is granted by the Dean.

A student who expects to continue his studies for the degree of Doctor of Philosophy (Graduate Council), Doctor of Business Administration, or Doctor of Public Administration, after receiving the Master's degree, will be assisted in planning his program so that he may qualify for admission to candidacy for the Doctorate.

No credit is granted for work done *in absentia* or without formal instruction, except for hospital residency and the thesis, which may be completed *in absentia* with the permission of the department, curriculum adviser, or committee concerned.

SCHOLARSHIP

Grades for graduate work are *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), and *I* (incomplete). A minimum of 6 of the required semester hours of course work completed in the Master's program must be graded *E*.

A Master's candidate who has accumulated more than 6 semester hours of *U* will be automatically suspended.

REQUIRED COURSES IN ADMINISTRATION
(Certain Fields)

Breadth and background in general administrative theory and practice are provided by the following courses, which are *required* of all Master's candidates in the fields of Public Administration, Business Administration, Health Care (including Hospital) Administration, and Personnel Administration.

BPA 201 Advanced Administrative Management (3)
BPA 204 Quantitative Factors in Administration (3)
BPA 207 Human Relations in Administration (3)

In addition, each student is normally required to take one of the following courses appropriate to his specific area of concentration:

BA 297 Case Studies in Business Administration (3)
HCA 206 Case Studies in Health Care Administration (3)
PA 298 Case Studies in Public Administration (3)

THE THESIS

The thesis subject should be selected as early as possible so as to permit effective integration with the course work.

The subject must be approved by the professor in charge and recorded in the Office of the Dean by the date announced in the calendar. The thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, how-

ever, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period, the student must register and pay tuition as for a repeated course.

MASTER OF ARTS IN GOVERNMENT

Curricula leading to the degree of Master of Arts in Government are available in the fields of Public Administration, Public Affairs, International Affairs, Economic Policy, Business and Economic Statistics, and Personnel Administration.

The programs leading to this degree require a minimum of 30 semester hours of work, including 24 hours of course work and a thesis equivalent to 6 semester hours. During recent years, most individual student programs have exceeded 30 hours, dependent upon the undergraduate major and other prerequisites.

Second-group courses (numbered 101–200) may be counted toward the Master's degree up to a maximum of 12 hours, but only when registration for advanced credit has been approved at the beginning of the course by the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

LANGUAGE REQUIREMENTS

(Certain Fields)

A candidate for the degree of Master of Arts in Government with a major in Economic Policy, International Affairs, or Public Affairs must show that he has a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. The language examination should be taken before the student begins the second 15 hours of his work. No student may take the examination after three unsuccessful attempts.

PUBLIC ADMINISTRATION

(See also the professional degree, Master of Public Administration, pages 38–39.)

Prerequisite: an undergraduate background in social science or business administration, or equivalent work experience.

The course work is planned with an adviser and must include the *required* courses on page 32.

There are in addition two required areas of study (1) Public Administration Programs and Policy and (2) Public Administration Methods and Procedures. The third field of study may be selected by the student from offerings which include General Management, Public Personnel Administration, Human Relations, Data Processing, Economics, Accounting, and Statistics.

The remaining 6 semester hours in the program, Public Administration 299–300, represent the major research project and preparation of the thesis.

PUBLIC AFFAIRS

Prerequisite: an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in the undergraduate Public Affairs Curriculum, as stated on pages 26–27 must be made up.

The language requirement, see above, must be satisfied.

The program in Public Affairs is offered in two fields of specialization: Domestic Economics and Domestic Politics.

Recommended for Domestic Economics: courses in economic development, economic policy, public finance, and national income.

Recommended for Domestic Politics: courses in United States social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion.

INTERNATIONAL AFFAIRS

Prerequisite: the applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University. (See pages 25–26.)

Any omissions in the applicant's former program must be made up by appropriate courses in addition to the requirements for the Master's degree.

The language requirement, page 33, must be satisfied.

The program in International Affairs is offered in five fields of specialization: International Economics, International Politics, International Communications, Regional Studies, and Sino-Soviet Studies.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Economics, History, Political Science, Geography, Psychology, and Sociology and Anthropology.

Group I—International Economics

Graduate courses in economics (numbered over 200) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

Group II—International Politics

Graduate courses in political science and history (numbered over 200), in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

Group III—International Communications

Graduate courses (numbered over 200) in political science, psychology, sociology and anthropology, and geography with 12 hours (one-half of the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

Group IV—Regional Studies

Graduate courses in economics, political science, history, and geography (numbered over 200) dealing with a geographic region, such as Latin America; Europe; Africa and the Middle East; Asia; the Soviet Orbit (see Institute for Sino-Soviet Studies, page 42); or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

Group V—Sino-Soviet Studies

The Institute for Sino-Soviet Studies provides a program of inter-disciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Move-

ment. Graduate studies under the auspices of the Institute are available to qualified students. Courses and seminars are designed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major Communist powers. (See page 42.)

ECONOMIC POLICY

Prerequisite: an undergraduate major in economics or the equivalent.

The 30 hours of course work must include Economics 210, 265–66; and the thesis, Economics 299–300.

The language requirement, page 33, must be satisfied.

Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

BUSINESS AND ECONOMIC STATISTICS

Prerequisite: an undergraduate major in Business and Economic Statistics, or the equivalent; such work must include a minimum of 24 semester hours of second-group courses in Statistics and a minimum of 10 semester hours in second-group courses in Accounting, Business Administration, and Economics.

This program requires at least 12 semester hours of graduate courses in Statistics. The remaining courses are to be selected from graduate offerings in accounting, business administration, economics, public administration, and statistics with the approval of the adviser. A thesis equivalent to 6 semester hours is required.

PERSONNEL ADMINISTRATION

The program in personnel administration leads to the degree of Master of Arts in Government, to the degree of Master of Public Administration (if elective courses are directed toward Public Administration), or to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration).

The course work must include the *required* courses on page 32 and the thesis (Business Administration 299–300 or Public Administration 299–300). Each individual student program is arranged in consultation with a curriculum adviser.

MASTER OF BUSINESS ADMINISTRATION

Curricula leading to the professional degree of Master of Business Administration are available in the fields of Accounting, Business Administration, Health Care (including Hospital) Administration, and Personnel Administration.

The purpose of the programs leading to the degree of Master of Business Administration is to develop the analytical ability and perspective which will contribute to success as a responsible executive. Because of the increasingly close relationship between government and business, these programs also provide an excellent background for many government careers. In order to provide maximum flexibility, each student program is planned with an adviser.

An applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the

comprehensive examination, and the submission of an acceptable thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis; and students with *no* previous background in business administration or accounting are rarely advised to take the comprehensive examination before completing 54 hours of course work. Students who have an undergraduate background in either business administration or accounting, however, are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. A student who has completed an undergraduate major in accounting or in business administration with a good record may qualify under a minimum acceptable program of 30 hours, including the thesis. No more than 6 hours of graduate course credits can be transferred from other institutions and each transfer of credit must be approved by the Dean.

ACCOUNTING

The Master's program in accounting is designed (1) for those who wish to pursue careers as professional accountants, (2) for those who wish to pursue careers of executive responsibility with emphasis on finance and accounting in either business or government, and (3) for those who wish to pursue careers as teachers of accounting. This program is sufficiently flexible to meet individual student objectives; selection of courses is made in consultation with the adviser. The program is available in three basic areas, professional accounting (preparing for C.P.A. designation), governmental accounting, and managerial accounting.

BUSINESS ADMINISTRATION

The Master of Business Administration program is designed for those who wish to pursue responsible careers as administrators in either government or business.

Individual programs are planned in consultation with the adviser to fit the professional objectives of the student. The course work must include the *required courses*, page 32. Elective fields of study include Administrative Theory and Practice; Personnel Management; Finance; Foreign Commerce; Marketing, Procurement, and Production; Controllership; and Transportation and Public Utilities.

A special program is provided in Automatic Data Processing. Courses are selected in consultation with an adviser.

HEALTH CARE (INCLUDING HOSPITAL) ADMINISTRATION

The graduate programs in Health Care Administration lead to the degree of Master of Business Administration. The two principal areas of concentration deal with the administration of (1) hospitals and (2) long-term facilities such as chronic disease hospitals, nursing homes, and homes for the aged.

HOSPITAL ADMINISTRATION

This graduate program is designed to help prepare students who aim for leadership in hospital administration. Its curriculum is planned to give students an opportunity to acquire the knowledge, attitudes, and skills which will provide a foundation for their growth into capable administrators of hospitals and related institutions.

Work for the degree is divided into two phases. During the first phase a min-

imum of 36 semester hours of academic courses, including the required courses on page 32 and other courses adapted in accordance with each student's background needs, must be completed satisfactorily. These courses cover the general and technical background of health care administration; general administrative theory and practice; and problem solving in the area of management as it relates to general and special hospitals (including mental hospitals) and long-term care facilities (including nursing homes and similar institutions).

The second phase requires at least a full calendar year of on-the-job institutional training under qualified supervision. Students may not enter this phase until they have completed the requirements in phase one. During phase two, each student will be required to complete a major report. This written report will count as part of the 9 semester hours required for this phase. Selected students will take an additional 9 hours covering a full second year of residency. By special permission, additional research and course work may be substituted for a part of the clinical training. Each program is made out for the individual student in accordance with his experience, needs, and aims.

Full-time students should complete both phases for the degree in twenty-one months; part-time students in thirty-six months. Under special circumstances additional time may be granted. No student will be admitted who does not plan to complete the entire program.

Prerequisite: a Bachelor's degree from an accredited college or university. While a 3.0 (*B*) average in the undergraduate major is expected, considerable weight will be given in the selection of candidates to personal qualifications, aptitude for Health Care Administration, and practical experience.

Although students may be accepted with majors in any undergraduate field, a desirable background would include courses in accounting, biology, business administration, economics, psychology, sociology, and statistics. One-semester courses in accounting and statistics must be taken prior to admission as a full-time graduate student. Applicants with academic deficiencies may be permitted to enroll as special students subject to the satisfactory completion of prescribed courses beyond the minimum requirements for admission.

In this program, the following courses must be taken:

		Semester Hours
HCA 202	Introduction to Health Care Administration	3
HCA 203–4	Organization and Management I–II	6
HCA 205	Hospital Management Procedures	3
HCA 207	Management Analysis in Health Care Institutions	3
HCA 209	Health Care Economics	3
*HCA 293–94–95	Residency I	9
Required	(See *Required* Courses, page 32)	12
Elective		6
	Total	45

ADMINISTRATION OF LONG-TERM CARE FACILITIES

The graduate work in the administration of long-term care facilities, such as chronic disease hospitals, nursing homes, and mental hospitals, uses the same basic curriculum as the program in Hospital Administration. Appropriate courses are substituted for those specific to Hospital Administration. The one-year residency is performed in one or more facilities for long-term care.

* The student must register for 3 semester hours of residency at the end of the first phase and before he leaves the University for his residency hospital. Registration for 1964–65 will be held May 29, 1964.

Requirements for admission to study in Long-term-care Administration are the same as those for Hospital Administration

Special Courses in Long-term-care Administration

The additional courses from which selection can be made by those wishing to study Long-term-care Administration are:

		Semester Hours
HCA 250	Administration for Mental Care	3
HCA 260	Administration for Long-term Care	3
HCA 261	Business Procedure in Long-term-care Facilities	3
HCA 262–63	Readings in Long-term-care Administration	6
HCA 267	Social Gerontology for the Administrator	3

PERSONNEL ADMINISTRATION

The field of Personnel Administration is described on page 35 and may lead to the degree of Master of Arts in Government, Master of Business Administration, or Master of Public Administration.

MASTER OF PUBLIC ADMINISTRATION

The purpose of the program leading to the Master of Public Administration, a professional degree, is to prepare graduates for positions of responsibility in the public service. Each applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the comprehensive examination, and the submission of an acceptable thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis; and students with no previous background in public administration are rarely advised to take the comprehensive examination before completing 54 hours of course work. Students who have undergraduate backgrounds in political science or history, or equivalent career experience, however, are encouraged to take the comprehensive examination as soon as the curriculum adviser believes they are prepared for it. The minimum acceptable program is 30 hours; and students who have completed the Public Affairs undergraduate major at The George Washington University, or its equivalent, with good records, may complete the requirements for the degree of Master of Public Administration within a 30-hour minimum, including the thesis. No more than 6 hours of graduate credit can be transferred from other institutions; and each transfer of credit must be approved by the Dean.

The course work must include the *required* courses listed on page 32. Other courses, selected with the approval of the adviser, should be concerned with selected fields of administration in government and related social and economic factors. The thesis, which may be a major case study, is prepared under the guidance of an appointed Faculty director.

The following areas of study are open to candidates for the degree of Master of Public Administration: Governmental Budgeting, Fiscal Management, Public Personnel Management, Human Relations in Administration, Business-Government Relations, and Data Processing and Systems Management.

A special program is provided in Urban Affairs, designed to prepare graduates

for effective work in positions that deal with the complete problem of metropolitan areas. Stress is placed upon gaining a broad understanding of the nature and structure of the city—particularly that of the super-city as it is developing today—and upon administrative theory. Programs in Urban Affairs are arranged in consultation with the adviser.

The field of Personnel Administration is described on page 35 and may lead to the degree of Master of Arts in Government, Master of Business Administration, or Master of Public Administration.

DOCTORAL STUDY

Work for the degrees of Doctor of Business Administration and Doctor of Public Administration is under the supervision of the Committee on Doctoral Studies.

An applicant must have the degree of Master of Business Administration or Master of Public Administration, as appropriate; Master of Arts in an approved field; or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examinations in two tools of research, chosen as the individual program dictates from the following: statistical methodology, accounting, reading and English translation ability in a modern foreign language, research methodology in the social sciences, research methodology in the engineering and physical sciences, and cartography. Other tool subjects may be substituted in accordance with the needs of individual programs.

The Committee on Doctoral Studies, in consultation with the applicant, will (1) designate six fields of study selected from the broad areas of Business Administration, Health Care Administration, Public Administration, and Economics, and (2) appoint an adviser to guide the student in his work in these fields. Most students will complete 30 semester hours in graduate courses and such additional course work as may be prescribed by the adviser; but each program is individually arranged in light of the student's background.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination in the fields of study previously designated, the examination will be scheduled during the following January or May.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

THE DISSERTATION

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. It is the responsibility of the candidate for a Doctoral degree to obtain from the Dean

a printed copy of the regulations governing the styling and reproduction of the dissertation, which are rigidly enforced. The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE FINAL EXAMINATION

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration or Doctor of Public Administration by the Committee on Doctoral Studies.

The degree of Doctor of Philosophy in the field of International Relations is offered in the Graduate Council of the University. The Doctoral program in this field includes work in economics, history, and political science. Students working towards the degree of Doctor of Philosophy in the fields of Political Science, History, and Economics can arrange concentrations in various aspects of international affairs. Requirements for the degree of Doctor of Philosophy are listed in the catalogue of the Graduate Council.

SPECIAL PROGRAMS

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in government career service. Each scholarship provides a tuition-free course of 3 hours a semester and appropriate academic credit (up to 6 semester hours) for the successful completion of training assignments required in any agency in which the training program has been evaluated by the University.

The Navy Graduate Financial Management Program, sponsored by the Naval Postgraduate School, provides 50 semester hours of work in financial management and related fields for a selected group of Naval and Marine officers. The Master's degree is awarded upon successful completion of this full-year program.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields for a selected group of Air Force officers. Most of the officers receive the Master of Arts degree upon successful completion of this full-year program.

The School of Government, Business, and International Affairs cooperates with the College of General Studies in the Off-Campus programs of that College, particularly in the fields of accounting, business administration, controllership, governmental administration, international affairs, and personnel administration. Special Master's

degree programs have been established by the College of General Studies in cooperation with the School of Government, Business, and International Affairs for the students and faculty of the Army War College, Carlisle Barracks, Pennsylvania; the Air War College and the Command and Staff College, Air University, Maxwell Air Force Base, Alabama; the Industrial College of the Armed Forces and the National War College, Fort McNair, Washington, D. C.; and the Naval War College, Newport, Rhode Island. These programs lead to the degrees of Master of Arts in International Affairs, Master of International Affairs, Master of Business Administration, and Master of Public Administration.

CENTER FOR THE BEHAVIORAL SCIENCES

The Center, administratively related to the School of Government, Business, and International Affairs, was established as an inter-departmental and inter-disciplinary organization for encouraging behavioral science research, projects, and programs. Projects are sponsored and financed by foundations, governmental agencies, private organizations, and individuals.

A Faculty Executive Committee gives University supervision, and a nation-wide Advisory Board provides policy recommendations for long-range planning. Faculty members and students participate in the research activities of the Center for the Behavioral Sciences.

Results of research studies and related projects are reported through a publication program of the Center. A two-week Laboratory utilizing sensitivity training is sponsored annually by the Center and the College of General Studies in cooperation with the National Training Laboratories of the National Education Association.

THE MANAGEMENT RESEARCH GROUP

The Management Research Group seeks to serve government and industry and commerce by contributing to the development and understanding of basic theory in the field of management. The Group also provides assistance in translating theory into practice.

Relationships and techniques important to modern information flow and managerial decision-making are stressed. The research conducted extends to system design, analysis of system performance, and the evaluation of practice in relation to managerial criteria.

INSTITUTE FOR SINO-SOVIET STUDIES

The Institute for Sino-Soviet Studies provides a program of inter-disciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Movement. The Institute also conducts integrated research on the ideological, political, economic, sociological, psychological, geographic, legal, and military aspects of Communism and Communist political systems, especially as manifested in the Soviet Union and Communist China.

Graduate studies under the auspices of the Institute are available to qualified students. Appropriate specialization, geographic and otherwise, is encouraged, but will be built upon a firm foundation of integrated research and training.

Students may pursue courses of study leading to the degrees of Master of Arts in Government in the field of International Affairs or Doctor of Philosophy (offered by the Graduate Council).

Courses and seminars are designed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major Communist powers. This approach is necessary in order to capture the full dimensions of the past, present, and future of the Communist movement, and to demonstrate how this movement affects the attitudes and policies of the major Communist nations. Using a multi-disciplinary approach, it is hoped that students will understand more fully the nature of the protracted conflict which confronts the free world.

Russian language courses are offered by the Department of Slavic Languages and Literatures. Chinese language (Mandarin) will be offered by special arrangement.

VETERANS EDUCATION

The Office of Veterans Education, Building Q, 2029 H Street NW., a service unit for veterans and war orphans, acts in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

PUBLIC LAW 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain

age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

Public Law 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

Public Law 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the University Office of Veterans Education at the time of registration.

Public Laws 16 and 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

AIR FORCE RESERVE OFFICERS TRAINING CORPS

The Mission of the Air Force ROTC is to develop in selected college students, through a permanent program of instruction at designated civilian educational institutions, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force.

PURPOSE AND OBJECTIVES OF AIR FORCE ROTC

To select and motivate cadets to serve as career Air Force officers in fields as specifically required by the United States Air Force.

To develop in cadets by precept, example, and participation the attributes of character, personality, and attitudes essential for leadership.

To develop in cadets an interest in, and understanding of, the Air Force mission, organization, operations, problems, and techniques.

To provide that military education and training which will give cadets a general background and sound foundation on which to build an officer career.

To select and motivate cadets for career fields as specifically required by the United States Air Force.

COURSE OF STUDY, ELIGIBILITY REQUIREMENTS, BENEFITS

The program is divided into the basic course covering the first two years and the advanced course covering the junior year, summer training unit, and senior year.

Enrollment in the basic course is open to all men students who are at least 14 years of age, physically fit, of good character, and candidates for Bachelor's degrees. Women students may enroll in the basic Leadership Laboratory course. Enrollment in Leadership Laboratory satisfies the physical education requirement for both men and women.

Enrollment in the advanced course is on a selective basis from among the best qualified cadets who have successfully completed the basic course. Cadets in the advanced course receive subsistence allowances from the Government totaling approximately $500, which is exempt from income tax. During the period of summer training, cadets receive $75 a month, food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses at no expense to the cadet.

Cadet candidates for pilot training are afforded an opportunity to take 35 hours of flying instruction at government expense. Flying instruction is given at an FAA approved school and is creditable toward a private pilot's certificate.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within the authorized quotas.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;* (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.† All additional hospital charges for operating

* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.
† See Rule (5) for exception.

room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

THE READING CLINIC

The Reading Clinic, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $35; for individual instruction, $5 a lesson; for semi-individual instruction, $4 a lesson; for instruction in small groups with common reading difficulties, $3.25 a lesson. All fees are payable in advance at the Office of the Cashier.

THE TESTING AND COUNSELING CENTER

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available primarily to students enrolled in the University, and secondarily to high school students and to adults of the community.

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties, provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and tests for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community clients, $65. Fees for specialized testing are dependent upon the services involved. **All fees are payable at the Office of the Center.**

STUDENT LIFE

RESIDENCE HALLS

The University maintains eight attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1963–64 are as follows:

	Academic Year	
Residence Halls for Men:	*Double*	*Triple*
John Quincy Adams Hall	.....	$350
John C. Calhoun Hall	$400	350
James C. Welling Hall (Limited space available)	320	.....
Residence Halls for Women:	*Single*	*Double*
William H. Crawford Hall	.....	$450
Devens Hall	$535	405
Hancock Hall	535	405
Dolley Madison Hall	.....	450
Hattie M. Strong Hall	535	450

Forms for applications, together with detailed information, may be obtained from the Dean of Women, Woodhull House, 2033 G Street NW. or the Dean of Men, Building Q, 2029 H Street NW.

Information concerning all off-campus housing may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling and conference.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-

Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies, participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

The University maintains the offices of the Dean of Men and the Dean of Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The deans are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council

The University believes in encouraging the development of a sense of civic responsibility in its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Dean of Men and Dean of Women, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life

The Committee on Student Life has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee. This Committee is given authority to approve or disapprove the establishment of any proposed organization on campus.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, Adams Hall Council, Calhoun Hall Council, Crawford Hall Council, Hancock Hall Council, Madison Hall Council, Strong Hall Council, Welling Hall Council, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Rules and Regulations Governing Student Activities."

SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the department of Physical Education in conducting the women's intramural and informal extra-mural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

Other sports activities are included in the Sailing Association and the Rowing Club.

PERFORMING ARTS

Students may participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III (Modern Dance) and Folk Dance; Enosinian Debating Society; Folk Singers Club; University Players; University Glee Club; and University Orchestra. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Colonial Program.—The Student Council sponsors a variety of programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is

the primary festive period of the school year. It includes the annual Pep Rally, homecoming show, the homecoming football game, and the homecoming dance.

Religion in Life Program.—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters. It is sponsored by the University Chapel.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree, the singing of Handel's Messiah, and the observance of a special Christmas service at the University Chapel.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Arnold Air Society.—A national Air Force ROTC society for advanced cadets.

Delphi.—An intersorority society.

Delta Sigma Rho.—A national forensic society.

Gate and Key.—An intrafraternity society.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Pershing Rifles.—A national Air Force ROTC society for basic cadets.

Phi Sigma Tau.—A national philosophy honor society.

Pi Epsilon Delta.—A national drama honorary fraternity.

Pi Gamma Mu.—A national social-science society.

Psi Chi.—A national psychology fraternity.

PROFESSIONAL ORGANIZATIONS AND DEPARTMENTAL CLUBS

Alpha Kappa Psi (commerce and economics), Association for Hospital Administration, El Club Español, Enosinian Debating Society, Le Cercle Français, Lester F. Ward Sociological Society, Phi Delta Gamma (graduate), Phi Sigma Tau (philosophy), Russian Club, Sigma Delta Pi (Spanish), Society for the Advancement of Management (student chapter).

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Sigma Delta, Sigma Nu, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Alpha Epsilon Phi, Sigma Delta Tau.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Association, Christian Science Organization, Eastern Orthodox Club, Lutheran Student Association, Newman Club, Student Christian Fellowship, Unitarian Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

STUDENT PUBLICATIONS

The Cherry Tree (the annual), *The University Hatchet* (weekly newspaper), *The Potomac* (literary magazine), *The Student Handbook*.

OTHER ORGANIZATIONS

Adams Hall Council, Alpha Theta Nu (scholarship winners), Big Sisters, Calhoun Hall Council, Cheerleaders, Chess Club, Colonial Boosters, Crawford Hall Council, Cultural Foundation, Dance Production, Democratic Club, Foggy Bottom Sports Car Club, Folk Singers Club, Glee Club, Hancock Hall Council, Interfraternity Council, International Relations Club, International Students Society, Inter-sorority Athletic Board, Junior Panhellenic Association, Madison Hall Council, Old Men, Republican Club, Rifle Club, Senior Panhellenic Association, Strong Hall Council, Student Council, Station WRGW, University Pep Band, Wandering Greeks, Welling Hall Council.

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, is *a partial listing* of the courses of instruction offered by the University in the summer of 1963 and in the academic year 1963–64. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study, a part-time student may complete the requirements and obtain a degree.

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor, and when the completion of additional work has been certified by the instructor.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the instructor to qualified seniors; they are not open to other undergraduates.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

GOVERNMENT AND BUSINESS

ACCOUNTING

FIRST GROUP

1-2 *Introductory Accounting* (3–3) Kennedy and Staff

First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3 *General Accounting* (3) Kennedy and Staff

Study of accounting systems and accounting for single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data. (Not offered 1963–64.)

SECOND GROUP

101 *Cost Accounting* (3)

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; and analysis and interpretation of cost data. Prerequisite: Accounting 1–2. (Fall—day and evening; spring—day; summer 1963.)

102 *Advanced Cost Accounting* (3)

Advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor. (Spring—evening.)

111 *Financial Statement Analysis* (3) Kennedy, Steele

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—day; spring—evening; summer 1963.)

115 *Survey of Accounting* (3) Disler, Gallagher

Accounting for single proprietorships and corporations with emphasis on the use of accounting information in the management process; study of theory, terminology, and the analysis and interpretation of accounting data. Not open for credit to Accounting or Business Administration majors. (Fall and spring—evening; summer 1963.)

121–22 *Intermediate Accounting* (3–3) Gallagher, Simpson

First half: valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening.)

Kennedy

132 *Accounting Theory* (3)
Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. (Spring—day; summer 1963.)

Lewis

141 *Governmental Accounting* (3)
Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—evening.)

Lewis

144 *Federal Accounting* (3)
Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of the United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor. (Not offered 1963–64.)

Lewis

147 *Federal Budgeting* (3)
Budgetary procedures in the Federal Government, with emphasis on agency level budget programming, budget formulation and the techniques for achieving management objectives through the budget process; cost-based budgeting; expenditure programming and accrued expenditure limitations; revenue estimating. Prerequisite: Accounting 144 or extensive experience in federal budgeting. (Spring—evening.)

Kurtz

161 *Income Tax Accounting* (3)
Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1–2. (Fall—day and evening.)

Kurtz

162 *Federal Tax Practice* (3)
Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, and gifts; use of the tax services; assessment, collection, and refund procedures. Prerequisite: Accounting 161 or the permission of the instructor. (Spring—evening.)

Kurtz

171 *Auditing* (3)
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22. (Fall—evening.)

Kurtz

172 *Auditing Practice* (3)
Preparation of audit reports, accounting statements to be filed with Securities and Exchange Commission, and current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor. (Spring—evening.)

Lewis

181 *Accounting Systems* (3)
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–22, and 171, or permission of the instructor. (Fall—evening.)

Kurtz, Simpson

191 *Advanced Accounting* (3)
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. (Fall—evening; summer 1963.)

Lewis, Buckler

193 *Business Budgeting* (3)
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

196 *Accounting Policy and Control* (3)
Accounting decision-making and analytical techniques, emphasizing the financial policy and operational role of the accountant and his contribution to enterprise management. Readings, cases, and problems form a basis for class discussions. Prerequisites: Accounting 101, 111, 161, and 171, or permission of the instructor. (Not offered 1963–64.)

198 *Professional Accounting Review* (3) Lewis
Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. (Spring—evening.)

THIRD GROUP

211–12 *Managerial Accounting* (3–3) Kennedy, Higginbotham
First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2 or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor. (*First half*: not offered 1963–64. *Second half*: summer 1963.)

215 *Survey of Managerial Accounting* (3) Higginbotham, Kennedy
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1–2, 3, or 115, or permission of the instructor. (Fall and spring—evening.)

231 *Contemporary Accounting Theory* (3) Kurtz, Higginbotham
Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Admission by permission of the instructor. (Fall—evening.)

246 *Governmental Accounting and Budgeting Problems* (3)
Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 144 or permission of the instructor. (Not offered 1963–64.)

275 *Internal Control and Auditing* (3) Kurtz
Internal accounting controls; review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offered 1963–64.)

295–96 *Seminar in Accounting* (3–3) Kennedy
Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. (Academic year—evening.)

297–98 *Accounting Reading and Research* (3–3) Kennedy and Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) Kennedy and Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the accounting courses listed below for students enrolled in the following special programs:

Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

3 *General Accounting* (3) (Summer 1963)
115 *Survey of Accounting* (3)
204 *Survey of Cost Accounting* (2)
211 *Managerial Accounting* (3)
215 *Survey of Managerial Accounting* (3)
278 *Survey of Internal Control and Auditing* (3)
293 *Budget Preparation and Administration* (3)

BUSINESS AND PUBLIC ADMINISTRATION

THIRD GROUP

201 *Advanced Administrative Management* (3) Eastin, Ericson, Gibbs
(Formerly Business Administration 201 and Public Administration 210)
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall—day and evening; spring—evening; summer 1963.)

204 *Quantitative Factors in Administration* (3) Gross, Van Tijn
Developments in quantitative methods of administration. (Fall and spring—evening.)

205 *Seminar in Communication and Executive Action* (3) Morrow
(Formerly Public Administration 242)
Seminar in the communications processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication. (Spring—evening.)

206 *Personnel Management* (3) Torpey
(Formerly Public Administration 231)
Basic principles; structure and organization of personnel offices; responsibilities; inter-agency relationships; personnel staffing, training, and work measurement. (Fall—evening.)

207–8 *Human Relations in Administration* (3–3) Eastin, Brown
(Formerly Business Administration 275–76 and Public Administration 241)
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. (Academic year—evening; summer 1963—Business and Public Administration 207 (3).)

262 *Contemporary Administrative Theory and Practice* (3) Ericson
(Formerly Public Administration 262)
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research. (Spring—evening.)

268 *Management Engineering* (3) Clewlow
(Formerly Business Administration 268 and Public Administration 210)
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurements, work simplification management audits, and other management improvement programs. (Fall—day and evening; spring—evening.)

287 *Relation of Government to Business* (3) Clayton
(Formerly Business Administration 278 and 287)
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—evening.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business and public administration courses for students enrolled in the Navy Graduate Financial Management Program and the Air Force Advanced Management Program.

206 *Personnel Management* (3)
207–8 *Human Relations in Administration* (3–3) (Summer 1963—Business and Public Administration 207 (3).)
268 *Management Engineering* (3) (Summer 1963.)

BUSINESS ADMINISTRATION

SECOND GROUP

101 *Introduction to Business* (3) Chandler
(Formerly Business Organization and Combination)
The business environment; its effects upon the decision making process. (Fall—day and evening; spring—day.)
102 *Fundamentals of Management* (3) Ericson, Page
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. (Fall and spring—day and evening; summer 1963.)
105 *Personnel Management* (3) Eastin, Stonesifer
Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1963.)
106 *Problems in Personnel Management* (3) Eastin, Stonesifer
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105. (Spring—evening.)
107 *Labor Management Contracts* (3) Sommers, Larson
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations. (Fall—day; spring—evening.)
109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. (Fall and spring—evening.)
113 *Real Estate* (3) Doubleday
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation. (Fall—evening.)
121 *Risk Management* (3) Doubleday
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. (Spring—evening.)

122 *Life Insurance and Estate Planning* (3) Campbell
Life insurance contracts, their use in providing protection and estate development. (Spring—evening.)

131 *Business Finance* (3) Clayton, Page
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

136 *Credit Management* (3)
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2. (Spring—evening.)

138 *Investments* (3) Dockeray, Shaffner
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2, Business Administration 131. (Spring—day.)

141 *Basic Marketing* (3) Prestwich
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1–2. (Fall—evening; spring—day; summer 1963—offered as *Principles of Marketing* (3).)

142 *Marketing Management Problems* (3) Prestwich
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141. (Spring—day.)

143 *Marketing Research* (3) Prestwich
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening.)

145 *Sales Management* (3)
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141. (Spring—evening.) Idelson

147 *Advertising* (3)
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Fall—evening.)

150 *Procurement and Materials Management* (3) Prestwich
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government. (Spring—evening.)

153 *Principles of Personal Selling* (3) Prestwich
Basic principles that underlie personal selling and the practical application of these principles. Emphasis is given to the human factor. Career opportunities and the role of selling in our economy are also considered. (Not offered 1963–64.)

158 *Traffic Management* (3) Kaye
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Not offered 1963–64.)

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Collins, McClure
(Fall—day and evening.)

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) Collins, Murphy
(Spring—day and evening.)

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) Murphy
(Fall—evening.)

171 *Principles of Transportation* (3) Clayton
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation. (Fall—evening.)

172 *Public Utilities* (3) Clayton
Legal and economic meaning of the public utility concept; development, services, economic characteristics, ratemaking, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries. (Spring—evening.)

173 *Commercial Motor Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services. (Not offered 1963–64.)

174 *Commercial Air Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport. (Not offered 1963–64.)

175 *Introduction to Foreign Trade* (3) Kaye
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2. (Fall—evening.)

176 *Exporting and Importing* (3) Kaye
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities. (Spring—evening.)

178 *International Business Operations* (3) Ogdon
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world. (Not offered 1963–64.)

181 *Manufacturing Production* (3) Page
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening.)

191 *Business Reports and Analyses* (3)
Sources of management information, array and analysis of data, interpretation and presentation of the findings. (Not offered 1963–64.)

193 *Management Communication* (3) Eastin, Morrow
A survey course in the problems of communication; written communication; style and format; oral communication: oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects. (Fall—evening; spring—day.)

195 *Controllership* (3)
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1–2. Open to seniors. (Fall—evening.)

198 *Case Problems in Management* (3) Eastin, Page
Principals and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall and spring—day and evening.)

THIRD GROUP

209 *Seminar in Personnel Management* (3) Eastin
Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening.)

210 *The Personnel Manager* (3) Jessup
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive. (Spring—evening.)

213 *Urban Land Management* (3) Woodruff
Background course for the developing curriculum in city planning. The course traces the forces that lie behind investment decisions which in turn determine the development of cities. (Spring—evening.)

218 *Survey of Data Processing* (3) Tosini
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems. (Fall and spring—evening.)

219 *Digital Computer Programming Concepts* (3) Schwartz
Machine functions and programmed control, instructions and programs, sub-routines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor. (Fall—evening.)

220 *Comparative Digital Computer Systems* (3) Schwartz
Properties and capacities of the range of equipments in use today, special purpose business equipments, recent and prospective equipment developments. Prerequisite: Business Administration 219. (Spring—evening.)

221 *Application of Digital Computers* (3) Alexander
The integration of data processing in the regular operations of the business or government organization and in establishing flows of management information, systems planning, the impact of Automatic Data Processing on management organization and decision making. Prerequisite: Business and Public Administration 204 and Business Administration 220. (Fall—evening.)

222 *Seminar in Advanced Digital Computer Concepts* (3) Alexander
Study of advanced problems in the design and application of computer systems. (Spring—evening.)

227 *Linear Programming* (3) Bracken
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. (Fall—evening.)

228 *Introduction to Operations Research for Management* (3) Bracken
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. (Spring—evening.)

231 *Corporate Financial Problems* (3) Dockeray, Houston
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. (Fall—evening.)

232 *Seminar in Business Finance* (3) Dockeray, Houston
Research in advanced financial problems. (Spring—evening.)

237 *Investment Analysis* (3) Dockeray, Shaffner
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138. (Fall—evening.)

238 *Seminar in Investments* (3) Dockeray, Shaffner
Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138. (Spring—evening.)

241 *Advanced Marketing Management* (3) Prestwich
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis. (Fall—evening; summer 1963—offered as *Seminar in Marketing* (3).)

242 *Seminar in Marketing* (3) Prestwich
Critical review of the development of marketing thought and important marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening.)

243 *Advanced Marketing Research* (3) Prestwich
Marketing research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and results, applications of marketing research. Cases, selected readings, and research project. Prerequisite: a course in basic statistics. (Spring—evening.)

247 *Advertising Management* (3) Prestwich
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Not offered 1963–64.)

248 *International Marketing* (3) Prestwich
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Not offered 1963–64.)

250 *Contract Administration* (3) Lazure
The management of government contracts with private suppliers. (Not offered 1963–64.)

251 *Retail Management* (3) Prestwich
Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis. (Fall—evening.)

255–56 *Seminar in Foreign Trade* (3) Ogdon
Research, analysis, and discussion of foreign trade institutions, public and private. (Academic year—evening.)

273–74 *Readings in Business* (3–3) The Staff
Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor. (Academic year—evening.)

286 *Management in the Armed Forces* (3) Jessup
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered 1963–64.)

288 *Executive Leadership* (3) Krieger
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations. (Fall—evening.)

291 *Seminar in Business Management* (3) Ericson, Page
Research on various phases of management as practiced in American industry. (Fall and spring—evening.)

293–94 *Business Research* (3–3) The Staff
First half: not offered 1963–64. *Second half:* summer 1963.

296 *Seminar in Controllership* (3)
Research on advanced problems of the controller in all types of business organization and the Federal Government. (Spring—evening.) Jessup

297 *Case Studies in Business Administration* (3)
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. (Fall and spring—evening.) Dockeray and Staff

299 *Thesis Seminar* (3) (Fall
An examination of thesis standards, research philosophy, and methodology. and spring—evening; summer 1963.) The Staff

300 *Thesis* (3)
(Fall and spring—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Engineering Administration.

107 *Labor-Management Contracts* (3) (Summer 1963)

235 *Financial Management* (3)

241 *Advanced Marketing Management* (3)

253 *Procurement and Distribution* (3)

261 *Seminar in Advanced Management* (3)

263–64 *Business Organization and Management* (3–3)

269 *Readings and Conferences in Controllership* (2 or 3) (Summer 1963)

284 *Readings and Conferences in Management* (2)

290 *Research Seminar in Management* (3)

295 *Research Seminar in Controllership* (3)

296 *Seminar in Controllership* (3)

HEALTH CARE ADMINISTRATION

THIRD GROUP

202 *Introduction to Health Care Administration* (3) Griffiths
Lecture and discussion (2 hours), laboratory (2 hours). Survey of community health services, public health organizations, voluntary agencies, and private practitioners (with attention to state and national health resources); medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening.)

203–4 *Organization and Management I–II* (3–3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). The history and current character of institutional health care. Organizational functions and structure of various kinds of hospitals and clinics, including long-term-care facilities such as mental hospitals, homes for the aged, nursing homes, and others related to health care administration. (Academic year—day and evening.)

205 *Hospital Management Procedures* (3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). A survey of hospital law; a study of hospital forms, procedures, and systems; hospital programs pertaining to disaster relief, safety, fire prevention; personnel, purchasing, and volunteer services; and the operational peculiarities of hospital departments. Prerequisite: Health Care Administration 203. (Fall—day and evening.)

206 *Case Studies in Health Care Administration* (3) Gibbs
A discussion of general ideas about administration as applied to practical cases. Emphasis is placed on policy making, planning, and controlling in hospitals. Prerequisite: Business and Public Administration 201 and Health Care Administration 203. (Spring—day and evening.)

207 *Management Analysis in Health Care Institutions* (3) Gintzig
Lecture (2 hours), laboratory (2 hours). Methods of collection, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. One day each week is spent in a medical care institution. This time is devoted to an investigation on which written and oral reports are based. Prerequisite: Health Care Administration 203 and 205. (Spring—day and evening.)

209 *Health Care Economics* (3) Griffiths
Lecture (2 hours), laboratory (2 hours). Medical economics including sources of hospital income; fund raising drives; methods of procuring, using, budgeting, and accounting for hospital funds; prepayment plans, impact on community of the cost of medical care. (Spring—day and evening.)

212 *Planning and Construction of Health Care Facilities* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of long and short health care planning, designing, constructing, equipping, and supplying. Prerequisite: Health Care Administration 202, 203. (Spring—day and evening.)

Administration of Health Care Systems (3) The Staff
The nature and special administrative requirements of federal hospital systems; health care associations at national, regional, and local levels; regional planning; health care plans and counseling activities. (As arranged.)

Administration for Mental Care (3) The Staff
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, and others. (As arranged.)

Administration for Long-term Care (3) The Staff
A survey of the medical and nursing procedures designed for administrators of long-term facilities including nursing homes and facilities for the aged. (Fall—evening.)

261 *Business Procedure in Long-term-care Facilities* (3) The Staff
Business procedures with special application to administration of facilities for long-term care including nursing homes and homes for the aged. (Spring—evening.)

262-63 *Readings in Long-term-care Administration* (3–3) The Staff
Advanced studies in selected aspects of administration of long-term-care facilities including nursing homes and homes for the aged and others. (As arranged.)

267 *Social Gerontology for the Administrator* (3) Tibbitts
A survey of information concerning the special characteristics of the elderly with which administrators of long-term-care facilities should be acquainted. (Fall—evening.)

270 *Research in Health Care Administration* (3) The Staff
Research into an assigned area dealing with Health Care Administration. (As arranged.)

285–86 *Readings in Hospital Administration* (3–3) The Staff
Advanced studies in various aspects of community health and hospital administration, and selected aspects of medical care. Admission by permission of the Coordinator. (Academic year—as arranged; summer 1963.)

293–94–95 *Residency I* (3–3–3) Gibbs
The twelve-month residency, beginning June 1 or July 1 of each year, has four major objectives: work experience under a qualified preceptor; periodic seminars with the University staff; periodic written progress reports of work accomplished; and a final written report of a major investigation. (Other courses may be substituted for Health Care Administration 294–95 as appropriate.)

296–97–98 *Residency II* (3–3–3) Gibbs
For selected students who take a second year of residency. The Staff

299–300 *Thesis* (3–3)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, by special arrangement, the University offers the following courses for students enrolled in the Health Care Administration programs.

107 *Medical Background Terminology** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A basic course in medical background information, disease classification, and terminology.

108 *Medical Records Processing** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Detailed consideration of methods of processing, preserving, and indexing medical records.

109 *The Medical Records Department** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A study of the Medical Records Department in the hospital. Its characteristics and function.

110 *Preparation and Auditing of Medical Records** (3) The Staff
Lecture (3 hours), laboratory (2 hours). The origin, development, and evolution of the medical record.

111 *Statistical Development and Analysis** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Development and analysis of statistical data required by the hospital for medical record purposes.

* Part of a sequence. Primarily for nondegree students from other countries; but may be offered for academic credit by special arrangement with the Coordinator of the Programs in Health Care Administration.

112-13-14 *Medical Records Internship** (3–3–3) The Staff
Work projects in appropriate hospitals under qualified preceptors and with faculty supervision.

150-51 *Survey of Health Care Organization and Procedures* (3–3) The Staff
Lectures and discussions. (May be audited by students not wishing college credit.) A survey course for students in other fields or from medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term-care facilities such as nursing homes, and homes for the aged. This is a two semester sequence. Students wishing to take the courses for graduate credit must take the laboratory, Health Care Administration 203. Not open to majors in Hospital Administration. (Academic year—evening.)

PUBLIC ADMINISTRATION

THIRD GROUP

211 *Problems of Governmental Organizations* (3) Larson
Analysis of the application of organizational theories and practices to government agencies, with particular emphasis on internal organization and control. Special problem areas are examined, such as decentralization, staff-line and field-headquarters relationships, and the role of committees. (Fall—evening; summer 1963.)

213 *Administration in Government* (3) Brown, Cloutier
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripital and centrifugal forces at work. (Fall and spring—evening.)

215 *Seminar in Comparative Administrative Systems* (3)
Examination and analysis of the administrative systems of the major foreign governments with particular attention to practices applicable to administration in the United States. (Fall—evening.)

216 *Administration of International and Supranational Activities* (3 or 6) Jordan
Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in multinational supported and staffed activities. Prerequisite: Public Administration 215. (Spring—evening.)

221-22 *Staff Functions in Government* (3–3) Brown, Cloutier
Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, secretary, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services. (Academic year—evening.)

225-26 *Internship in the Administrative Processes* (3–3) Sommers
This course is open only to persons selected by government agencies for participation in approved intern programs. (Academic year—as arranged.)

229 *Federal Personnel Procedures* (3) Torpey
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. (Spring—evening; summer 1963.)

233 *Seminar in Manpower Development and Utilization* (3) Sommers
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems. (Fall—evening.)

243 *Local Government Law** (2) Mallison
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Spring—evening.)

244 *Administration in State and Metropolitan Governments* (3)
Examination of public administration at the state and local level. Developments and trends growing out of the changing urban pattern. (Fall—evening.)

251 *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration. (Fall and spring—evening; summer 1963.)

252 *Seminar in Planning and Programming* (3) Jacobus
The administrative processes of planning and programming in government, relationship to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. This course is primarily for students who have completed Public Administration 251. (Fall—evening.)

254 *Controllership in the Federal Services* (3) Krieger
Function of the controller in federal agencies; special problems analyzed; comparison of the controller function in government and business. (Spring—evening.)

259 *Government Procurement and Property Management* (3)
Principles and problems of government procurement; accounting and inventory; storage; development of specifications; property management. (Not offered 1963–64.)

260 *Seminar in Policy Formulation and Administration* (3) Brown
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy. (Fall—evening.)

261 *Public Opinion and the Administrator* (3) Stromsem
Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs; evaluating public relations programs; the importance of timing; use of public opinion measurement techniques. (Not offered 1963–64.)

271 *Reading and Conference Course in Public Management and Administration* (3) The Staff
The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration. (Fall—evening; summer 1963.)

272 *Seminar in Public Personnel Administration* (3) Sommers
The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration. (Spring—as arranged.)

297 *Seminar in Public Administration* (3) Brown and Staff
Advanced research on various phases of public administration including methods of policy formulation and control, the application of systems to management, administration problems of bureaucratic relationships. (Not offered 1963–64.)

298 *Case Studies in Public Administration* (3) Cloutier
(Formerly Public Administration 212)
Analysis and discussion of problems in public management by use of the case method. (Spring—evening.)

* Same as Law 349.

299 *Thesis* (3) Larson and Staff
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1963.)

300 *Thesis* (3) The Staff
(Fall and spring—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following public administration courses for students enrolled in the Air Force Advanced Management Program and in Engineering Administration.

213 *Administration in Government* (3) (Summer 1963.)

260 *Seminar in Policy Formulation and Administration* (3)

INTERNATIONAL AFFAIRS

The following courses are offered by the departments of Economics, Geography and Regional Science, History, Political Science, Psychology, and Sociology and Anthropology. For course descriptions see the departmental announcements concerned. The courses are listed here as an indication of the range of elective courses available to students of International Affairs at The George Washington University. Other courses may be approved as electives in individual student programs.

General

Anthropology 161, *Language and Culture* (3)
Anthropology 263, *Culture, Contact, and Change* (3)
Economics 181–82, *International Economics* (3–3)
Economics 246, *Foreign Labor Movements* (3)
Economics 281–82, *International Economics* (3–3)
Economics 284, *United States Foreign Economic Policy* (3)
Economics 290, *Seminar in International Economics* (3)
Geography 52, *World Regions* (3)
Geography 126, *World Economics* (3)
Geography 127, *World Population and Settlement* (3)
Geography 145, *World Cultural Geography* (3)
Geography 146, *World Political Geography* (3)
Geography 211–12, *Reading Course in Economic Geography* (3–3)
Geography 241–42, *Seminar: Place and Culture* (3–3)

Geography 251–52, *Seminar: World Problem Areas* (3–3)
History 181–82, *Diplomatic History of the United States* (3–3)
History 183, *Oversea Expansion of the United States* (3)
History 184, *Canada and the United States* (3)
History 281–82, *Seminar in the Diplomatic History of the United States* (3–3)
History 285–86, *Reading Course in American Diplomatic History* (3–3)
Political Science 111, *Introduction to Comparative Government and Politics* (3)
Political Science 112, *Introduction to Comparative Government and Politics* (3)
Political Science 117–18, *Political Theory: the Nature and Growth of Political Thought in the West* (3–3)
Political Science 171, *International Politics* (3)
Political Science 172, *International Organization: the United Nations* (3)
Political Science 181–82, *International Law* (3–3)
Political Science 187–88, *Current Problems in International Politics* (1–1)
Political Science 197, *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3)
Political Science 212, *Seminar: Comparative Government and Politics* (3)
Political Science 213, *Readings in Comparative Government and Politics* (3)
Political Science 217, *Seminar: Topics in Political Theory* (3)
Political Science 220, *Reading Course in Political Theory* (3)
*Political Science 261, *International and United States Foreign Policy* (3)
Political Science 271–72, *Problems in International Politics and Organization* (3–3)
Political Science 273, *Public Opinion and Foreign Policy* (3)
Political Science 274, *Methods and Objectives of Foreign Policy* (3)
Political Science 279, *Reading Course in International Affairs* (3)
Political Science 281–82, *Seminar: International Law and Relations* (3–3)
*Political Science 283, *Topics in International Law* (3)
*Political Science 285, *Diplomacy Since World War II* (3)
Psychology 156, *Psychology of Propaganda and Public Opinion* (3)
Sociology 144, *Mass Communications* (3)
Sociology 226, *Problems of Underdeveloped Areas* (3)
Sociology 241, *Population Problems* (3)

Africa

Geography 155, *Africa* (3)
Political Science 192, *Politics of North and Central Africa* (3)

* Offered in off-campus War College programs only.

Far East

Geography 165, *Eastern and Southeastern Asia* (3)
Geography 167, *The Pacific* (3)
Geography 168, *Australia* (3)
History 190, *History of India* (3)
History 195–96, *History of the Far East* (3–3)
Political Science 194, *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Political Science 293–94, *Seminar: International Politics and Government in the Pacific Area* (3–3)

Latin America

Economics 185–86, *Economic History and Problems of Latin America* (3–3)
Economics 285–86, *Economic Development of Latin America* (3–3)
Economics 287–88, *Latin America: Trade and Commodity Policy* (3–3)
Geography 161, *Latin America* (3)
History 163, *Colonial Latin America* (3)
History 164, *South America since Independence* (3)
History 166, *Mexico and the Caribbean since Independence* (3)
History 261–62, *Seminar in Latin American History* (3–3)
Political Science 177, *Recent Trends in Latin American Politics and Government* (3)
Political Science 277, *Seminar: Latin American Government* (3)
Political Science 278, *Seminar: Latin American Political Philosophy* (3)

Middle East

Geography 156, *The Middle East* (3)
History 193, *History of the Near East* (3)
History 294, *Seminar in the History of the Modern Near East* (3)
Political Science 191, *Politics of the Middle East* (3)
Political Science 292, *International Politics and Government in the Middle East* (3)

Sino-Soviet

Economics 133, *The Economy of the Soviet Union* (3)
Economics 267, *The Soviet Economy* (3)
Geography 164, *Communist China* (3)
Geography 166, *The Soviet Union* (3)
History 145–46, *History of Russia* (3–3)
History 245–46, *Seminar in Eurasian History* (3–3)

Political Science 215–16, *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3)
Political Science 227, *Seminar: the East European Satellites* (3)
Political Science 230, *Seminar: Operational Techniques of International Communism* (3)
Political Science 238, *Seminar: Legal Order in the USSR—a Survey of Soviet Law* (3)
Political Science 239, *Seminar: Communist Chinese Constitutional Law* (3)
Political Science 265, *Seminar: Communist Chinese Foreign Policy and Strategy* (3)
Political Science 267, *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)
Political Science 270, *Seminar: Problems of Soviet Political Strategy—Case Studies* (3)
Political Science 288, *Seminar: Communist Military Policy and Strategy* (3)
Political Science 296, *Seminar: the Communist Bloc in Far Eastern International Politics* (3)

Western Europe

Geography 153, *Western Europe* (3)
Geography 154, *The Mediterranean* (3)
History 141–42, *History of France* (3–3)
History 148, *Oversea Expansion of Europe* (3)
History 149–50, *European Diplomatic History* (3–3)
History 241–42, *Seminar in Modern European History* (3–3)
History 249, *Seminar in European Diplomatic History* (3)
Political Science 113, *Political Problems of the British Commonwealth of Nations* (3)
Political Science 178, *International Politics in the Western Hemisphere* (3)

COURSES FROM OTHER DEPARTMENTS

BOTANY

BIOLOGY

1-2 *Introductory Biology* (4–4) The Staff

An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences (4):* fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences (4):* fall and spring—day and evening; summer 1963.)

CHEMISTRY

3-4 *Fundamentals of Physical Science* (4–4) Schmidt, Ethier

A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester. (Academic year—day.)

ECONOMICS*

FIRST GROUP

1-2 *Principles of Economics** (3–3) Skinner and Staff

Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—evening; spring—day and evening; summer 1963.)

SECOND GROUP

101-2 *Economic Analysis* (3–3) The Staff

Analysis of demand, supply, and pricing; theory of national income determination. (*First half:* fall—day and evening; spring—evening; summer 1963. *Second half:* fall—day; spring—day and evening.)

104 *History of Economic Thought* (3) Burns

History of the major schools of economic thought; influence of changing problems on the development of economic theory. (Spring—day.)

* Economics 1-2 is prerequisite to all other courses in Economics.

105 *Business Cycles* (3) Kendrick
Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (Fall—evening.)

121 *Money and Banking* (3) Hunter
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (Fall—day and evening; spring—evening; summer 1963.)

123 *Monetary Theory and Policy* (3) Hunter
Principal contemporary theories, background of recent monetary policy. (Spring—day.)

133 *The Economy of the Soviet Union* (3)
Development and main features of the economic life of the Soviet Union (See History 145–46 and Geography 196). (Not offered 1963–64.)

141 *Unionism and Collective Bargaining* (3) Holland
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (Fall—day.)

142 *Labor Economics* (3) Holland
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Spring—day.)

161–62 *Public Finance and Taxation* (3–3) Watson
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (Academic year—evening.)

165 *Government Control of Economic Activity* (3) Schmidt
Changing role of government in promoting and regulating economic activity, types and spheres of control. (Fall—day.)

181–82 *International Economics* (3–3) Sammons
First half: survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening; summer 1963—Economics 181 (3).)

185–86 *Economic History and Problems of Latin America* (3–3) Skinner
Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

198 *Proseminar in Economics* (3) (Fall and spring—as arranged.)
Comprehensive survey of economics. Prerequisite: Economics 101–2 and 121.

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns
Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

203–4 *Contemporary Price Theory* (3–3) Watson
The theory of relative prices from Marshall to the present. (Academic year—evening.)

205 *Theory of Employment and Income* (3) Kendrick
Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)

206 *Business Cycle Analysis* (3) Kendrick
Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)

208 *The National Income* (3) Kendrick
The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)

210 *Seminar in Economics* (3) Skinner
Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)

212 *Seminar in Price Theory* (3) Watson
Advanced topics in the theory of relative prices. Prerequisite: Economics 203–4 or the equivalent. (Not offered 1963–64.)

213 *Economic Thought in the Twentieth Century* (3) Burns
Continuation of Economics 201–2. The principal trends in economic thought during the present century. (Not offered 1963–64.)

215–16 *Mathematical Economics* (3–3) Solomon
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)

217–18 *Survey of Economics* (3–3) Watson
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)

219 *Managerial Economics* (3) Watson
Analysis of price, production, and inventory policies of business firms. (Summer 1963.)

221–22 *Monetary Theory* (3–3) Hunter
Contemporary monetary theories. (Academic year—evening.)

223–24 *Monetary Policy and Central Banking* (3–3) Axilrod
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)

231–32 *Quantitative Economics* (3–3) Solomon
Selected topics in quantitative economics. (Not offered 1963–64.)

241 *Unionism, Collective Bargaining, and Labor Economics* (3) Holland
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)

244 *Problems in Unionism, Collective Bargaining, and Labor Economics* (3) Holland
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)

246 *Foreign Labor Movements* (3) Holland
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)

247 *Labor Relations in the Federal Service* (3) Holland
Admission by permission of the instructor. (Fall and spring—evening.)

251–52 *Economic Development* (3–3) Schmidt
The theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening; summer 1963—Economics 251 (3).)

253 *Productivity Analysis* (3) Kendrick
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)

261–62 *Public Finance and Fiscal Policy* (3–3) Moor
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)

263–64 *Theory of Public Finance* (3–3) deVries
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)

265–66 *Theory of Economic Policy* (3–3) Watson
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)

267 *The Soviet Economy* (3) Gekker
Development of the Soviet-type economy; organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145–46, 247, and Geography 166.) (Fall—evening.)

281–82 *International Economics* (3-3) Schmidt
First half: the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)

284 *United States Foreign Economic Policy* (3) Schmidt
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Not offered 1963–64.)

285–86 *Economic Development of Latin America* (3–3) Sammons
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)

287–88 *Latin America: Trade and Commodity Policy* (3–3)
Tariffs and exchange control systems, bilateral and general commercial agreements, terms of trade. (Not offered 1963–64.)

290 *Seminar in International Economics* (3) Schmidt
Advanced topics in international economics. Prerequisite: Economics 281–82 or the equivalent. (1963–64 and alternate years: spring—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following economics courses for students enrolled in Navy Graduate Financial Management Program, Air Force Advanced Management Program, and Institute for Sino-Soviet Studies.

191 *Foreign Economic Policies and Problems* (3)

195 *Governmental and Industrial Economics* (3)

267 *The Soviet Economy* (3)

ENGLISH

A *English for Foreign Students* (3) — Allee and Staff

A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1963.)

B *English for Foreign Students* (3) — Allee and Staff

For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style. (Fall—evening; spring—day and evening.)

1 *English Composition** (3) — Moore and Staff

Review of grammar, exercises in composition, readings. (Fall and spring—day and evening; summer 1963.)

1X *English Composition** (3) — Moore and Staff

An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets five hours a week and carries 3 semester hours of credit. The tuition fee is $133 (the regular fee of $36 a semester hour, plus an additional fee of $25). (Fall and spring—day and evening; summer 1963.)

2 *English Composition** (3) — Moore and Staff

For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X. (Fall and spring—day and evening; summer 1963.)

11 *The Writing of Reports* (3) — Turner and Staff

Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X, and 2 or 4. (Fall and spring—day and evening.)

GEOGRAPHY

FIRST GROUP

51 *Introduction to Geography* (3) — The Staff

A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall—day; spring—evening; summer 1963.)

52 *World Regions* (3) — The Staff

The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall—evening; spring—day; summer 1963.)

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, sentence grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement.

SECOND GROUP

103–4 *Cartography* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting; elementary map projections; map and graph planning design and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester. (Academic year—Saturday morning.)

124 *Land Capabilities* (3) Davis
Evaluation of land capabilities based on analysis of locational, physical, economic, and social land characteristics. Principles of site analysis and best use. Systems of measurement of area potential. (1963–64 and alternate years: fall—evening.)

125 *Transportation Complexes* (3) Davis
A study of transportation networks and systems by which people, things, and ideas are given varying degrees of place utility. An analysis of the role of transportation in urban, national, and international relationships. (1963–64 and alternate years: spring—evening.)

126 *World Economies* (3)
Description and comparison of differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (1964–65 and alternate years.)

127 *World Population and Settlement* (3)
Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (1964–65 and alternate years.)

133 *Regional Industrial Structures* (3)
The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1964–65 and alternate years.)

134 *Location of Industry* (3)
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1964–65 and alternate years.)

137 *Industrial Planning for Underdeveloped Areas* (3)
The appraisal of industrial development potentials in non-industrial areas; the preparation and implementation of industrial development plans; peculiar problems of industrial development in traditional societies; the role of industrialized countries, with particular emphasis on United States responsibilities. (Fall—day.)

141–42 *Urban Settlement* (3–3) Davis
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1963–64 and alternate years: academic year—day.)

145 *World Cultural Geography* (3) Campbell
A study of differences in national character structures; modal behavior patterns and personality traits typical of various cultures; difficulties these differences present in interpersonal relations and intercultural communications. (Fall—day.)

146 *World Political Geography* (3) Campbell
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Spring—day.)

151 *United States** (3) (Formerly Geography 181)
(Not offered 1963–64.)

* Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 185–86, *Economic History and Problems of Latin America;* History 164. *South America since Independence;* and Political Science 177, *Recent Trends in Latin American Politics and Government.*

153 *Western Europe** (3) (Formerly Geography (183)
(1964–65 and alternate years.)

154 *The Mediterranean** (3) (Formerly Geography 184)
(1964–65 and alternate years.)

155 *Africa** (3) (Formerly Geography 185) Gassaway
(Fall—day; summer 1963—offered as Geography 185 (3).)

156 *The Middle East** (3) (Formerly Geography 186) Gassaway
(Spring—day.)

161 *Latin America** (3) (Formerly Geography 191)
(Fall—day.)

164 *Communist China** (3) (Formerly Geography 194)
(1964–65 and alternate years.)

165 *Eastern and Southeastern Asia** (3) (Formerly Geography 195)
(Spring—day; summer 1963—offered as Geography 195 (3).)

166 *The Soviet Union** (3) (Formerly Geography 196)
(1964–65 and alternate years.)

167 *The Pacific** (3) (Formerly Geography 197)
(Not offered 1963–64.)

168 *Australia** (3) (Formerly Geography 198)
(Not offered 1963–64.)

173–74 *City Planning: Theory and Practice* (3–3)
Theories of city functions and structures; evaluation of urban activities, value systems; analysis of contemporary urban problems; optimum designs for future cities; theory and techniques of planning; action techniques; implementation of plans. (1964–65 and alternate years.)

175–76 *City Planning: Survey and Design* (3–3)
Information systems for city planning; methods of analysis of urban data; and the design of proposed urban development and renewal. (*First half:* summer 1963. *Second half:* not offered 1963–64.)

179–80 *Readings in Urban and Regional Development* (1–1) The Staff
(Academic year—as arranged.)

189–90 *Readings in Geography* (1–1) The Staff
(Academic year—as arranged.)

199–200 *Theory of Regions* (3–3)
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1963–64.)

THIRD GROUP†

201–2 *Seminar: History and Philosophy of Geography* (3–3)
A year course; credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1964–65 and alternate years.)

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* Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended; for example: Economics 185–86, *Economic History and Problems of Latin America*, History 168, *South America since Independence;* and Political Science 177, *Recent Trends in Latin American Politics and Government.*

† Senior major or graduate status is required in all third-group courses.

Davis

205–6 *Area Data Collection and Analysis* (3–3)
A year course: credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information; methods and systems of data collection; quantitative and qualitative methods of analysis; systems of synthesis. (1963–64 and alternate years: academic year—evening.)

211–12 *Reading Course in Economic Geography* (3–3)
The development of economic geography as a systematic approach to regional analysis, the literature of economic geography, research methods. (Not offered 1963–64.)

233–34 *Seminar: Regional and Urban Planning* (3–3)
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (Academic year—evening.)

Campbell

241–42 *Seminar: Place and Culture* (3–3)
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (1963–64 and alternate years: academic year—evening.)

Gassaway

251–52 *Seminar: World Problem Areas* (3–3)
A study of those parts of the world which have become matters of international concern, whether because of their political or social instability, unsound economic development, or aggressive tendencies. An evaluation of the complex of factors which have created the "problems". (Academic year—evening.)

The Staff

295–96 *Research* (3–3)
(Academic year—as arranged.)

The Staff

299–300 *Thesis* (3–3)

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offered the following course for students in the Institute for Sino-Soviet Studies.

252 *Seminar: World Problem Areas* (3)

GEOLOGY

The Staff

1–2 *Introductory Geology* (3–3)
Lecture (2 hours), laboratory and field trip (2 hours). A survey course covering the principles of geology. Laboratory fee, $6 a semester. (Academic year—day; summer 1963.)

GERMANIC LANGUAGES AND LITERATURES

The Staff

1–2 *First-year German* (3–3)
A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

3–4 *Second-year German* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: German 1–2 or two years of high school German. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *German Conversation and Composition* (3–3) Osterle
Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (Academic year—day.)

47 *Beginning German for Reading Examination Candidates* (0) The Staff
Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, $108. (Fall and spring—evening; summer 1963.)

49 *German Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1963.)

51–52 *Introduction to German Literature* (3–3) Osterle
Prerequisite: German 4 or the equivalent. (Academic year—evening.)

HISTORY*

FIRST GROUP

39–40 *The Development of European Civilization* (3–3) Kayser, Herber, Kenny
Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present. (Academic year—day and evening; summer 1963.)

71–72 *The Development of the Civilization of the United States* (3–3) Haskett, Hill
Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

105–6 *Introduction to the History of Science* (3–3) Multhauf
First half: the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half:* the main lines of development of astronomy, physics, chemistry, biology, and medicine from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39–40 or a background in science. (Academic year—evening.)

109–10 *Ancient History* (3–3) Kayser
The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Not offered 1963–64.)

* History 39-40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 161 through 184; either History 39–40 or 71–72, to courses 161 through 166.

111–12 *Medieval History* (3–3) Kayser
The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)

130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. (Summer 1963.)

131–32 *History of Germany* (3–3) Herber
The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1963–64.)

141–42 *History of France* (3–3) Herber
A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)

145–46 *History of Russia* (3–3) Thompson
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860–1881. *Second half:* Revolution and Soviet rule, 1881–1960. (Academic year—evening; summer 1963.)

147 *Economic History of Europe* (3) Gray
A survey from ancient times to the present day. (Not offered 1963–64.)

148 *Oversea Expansion of Europe* (3)
International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the 19th and 20th centuries. (Not offered 1963–64.)

149–50 *European Diplomatic History* (3–3) Davison
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. (*First half:* 1963–64 and alternate years; fall—day. *Second half:* spring—day and evening.)

151–52 *English History* (3–3) Kenny
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half:* to 1689. *Second half:* since 1689. (Academic year—day and evening; summer 1963—History 152 (3).)

161 *Ancient Americans* (3) Davis
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (1964–65 and alternate years.)

162 *Iberian Background of Latin America* (3) Davis
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (1964–65 and alternate years.)

163 *Colonial Latin America* (3)
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—day.) Davis

164 *South America since Independence* (3)
Development of the independent South American states in the 19th and 20th centuries. (Alternate spring and summer terms: summer 1964; spring 1965.)

166 *Mexico and the Caribbean since Independence* (3)
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Alternate spring and summer terms: spring—day; summer 1963.) Haskett

170 *American Colonial History* (3)
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Spring—evening.)

171–72 *Social History of the United States* (3–3) Gray
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time. (Academic year—day; summer 1963—History 171 (3).)

173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Spring—evening; summer 1963.)

174 *Economic History of the United States* (3) Gray
Main trends in the development of American agriculture, industry, and trade since 1607, with their Old World backgrounds and in their world setting. (Fall—day.)

175–76 *Political and Constitutional History of the United States* (3–3) Haskett
First half: to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1963—History 176 (3).)

177 *The South* (3) Robertson
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Spring—day.)

178 *The West* (3)
The role of the frontier in American history. (Not offered 1963–64.)

179 *The Civil War* (3) Robertson
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself; the immediate and long-range effects of the War on American life. (Fall—day.)

181–82 *Diplomatic History of the United States* (3–3) Merriman, Hill
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1963—History 182 (3).)

183 *Oversea Expansion of the United States* (3) Merriman
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)

184 *Canada and the United States* (3) Merriman
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (Fall—day.)

186 *History of India* (3) Thompson
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1963–64.)

191–92 *Current History* (1–1)
Contemporary events in their world setting. (Not offered 1963–64.)

195 *History of the Near East* (3) Davison
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (1964–65 and alternate years.)

195–96 *History of the Far East* (3–3) Thompson
First half: the civilization of China and Japan from the beginnings to 1600. *Second half:* the modern Far East under the impact of the West since 1600. (*First half:* fall—day. *Second half:* not offered 1963–64.)

197–98 *Proseminar in Latin American Civilization* (3–3) Davis, Robb, Sammons
Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the History Major* (3–3) Thompson
Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, in its world setting, including representative selections from the classics of historical literature. (Academic year—evening.)

THIRD GROUP*

211–12 *Reading Course in Medieval History* (3–3) Herber
Primarily for graduate students. (Not offered 1963–64.)

241–42 *Seminar in Modern European History* (3–3) Davison
(Academic year—evening.)

243 *Reading Course in Modern European History* (3) Thompson
For graduate students. (Fall—day.)

245–46 *Seminar in Eurasian History* (3–3) Thompson
(*First half:* not offered 1963–64. *Second half:* spring—day.)

247–48 *Reading Course in Russian History* (3–3) Davison
For graduate students. (Academic year—day.)

249 *Seminar in European Diplomatic History* (3) Kenny
(Spring—day.)

251–52 *Seminar in English History* (3–3) Davis
(Academic year—evening.)

261–62 *Seminar in Latin American History* (3–3) Gray
(*First half:* summer 1963. *Second half:* not offered 1963–64.)

271–72 *Seminar in the Social History of the United States* (3–3) Gray
(Academic year—day.)

273–74 *Reading Course in American Economic and Social History* (3–3) Haskett
For graduate students. (Academic year—evening.)

275–76 *Seminar in American Political and Constitutional History* (3–3) Haskett
(Academic year—evening.)

277–78 *Reading Course in American Political and Constitutional History* (3–3) Merriman
For graduate students. (*First half:* 1964–65 and alternate years; fall—day. *Second half:* 1963–64 and alternate years; fall—day.)

281–82 *Seminar in the Diplomatic History of the United States* (3–3) Merriman
(Academic year—day.)

285–86 *Reading Course in American Diplomatic History* (3–3) The Staff
For graduate students. (Academic year—evening.)

291–92 *Seminar* (3–3)
Prerequisite: approval of the Department. (Academic year—as arranged; summer 1963—History 291 (3).)

* Approval of the instructor is required for registration in each third-group course.

294 *Seminar in the History of the Modern Near East* (3) Davison
(Fall—evening.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1963.)

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following course in the Institute for Sino-Soviet Studies.

246 *Seminar in Eurasian History* (3)

MATHEMATICS*

FIRST GROUP*

3 *College Algebra* (3) The Staff
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1963.)

6 *Plane Trigonometry* (3) The Staff
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1963.)

9 *General Mathematics I* (3) The Staff
For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1963.)

10 *General Mathematics II* (3) The Staff
An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1963.)

12 *Finite Mathematics I* (3) The Staff
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening.)

16 *Finite Mathematics II* (3) The Staff
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening.)

41 *Calculus I* (3) The Staff
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or

* No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1963.)

22 *Calculus II* (3) The Staff
Differentiation and integration of transcendental functions and applications, conics, parametric equations, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1963.)

23 *Calculus III* (3) The Staff
Vector concepts, improper integrals, solid geometry, partial differentiation and applications. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1963.)

24 *Calculus IV* (3) The Staff
Multiple integration with application, infinite series, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1963.)

27 *Calculus I and II* (6) The Staff
The equivalent of Mathematics 21 and 22. (Fall—day.)

28 *Calculus III and IV* (6) The Staff
The equivalent of Mathematics 23 and 24. (Spring—day.)

PHILOSOPHY

51–52 *Introduction to Philosophy* (3–3) The Staff
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1963—Philosophy 51 (3).)

PHYSICAL EDUCATION

The Staff

1–2 *Freshman Physical Education* (1–1) The Staff
Physical Education fee, $4.50 a semester. (Academic year—day.)

11–12 *Sophomore Physical Education* (1–1)
Physical Education fee, $4.50 a semester. (Academic year—day.)

PHYSICS

Koehl and Staff

11 *Introductory Physics* (3)
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. (Fall and spring—day and evening; summer 1963.)

12 *Introductory Physics* (3) **Koehl and Staff**
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Material fee, $11. (Spring—day and evening; summer 1963.)

13 *Introductory Physics* (3) **Harrison and Staff**
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Elementary electricity and magnetism. Prerequisite: Physics 11. Material fee, $11. (Fall—day and evening; summer 1963.)

POLITICAL SCIENCE

FIRST GROUP

1 *Introduction to Government** (3) **The Staff**
Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day; summer 1963.)

9-10 *Government of the United States** (3-3) **The Staff**
First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

SECOND GROUP*

104 *State and Local Governments* (3) **LeBlanc**
State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—evening.)

105 *The Governmental Process of the District of Columbia* (3) **LeBlanc**
Legal structure and political problems of the District of Columbia including restrictions on home rule, Congressional relations, and group politics. (Not offered 1963–64.)

107 *Problems in Modern Political Thought* (3) **Kraus**
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Not offered 1963–64.)

111 *Introduction to Comparative Government and Politics* (3) **Kraus**
Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening.)

112 *Introduction to Comparative Government and Politics* (3) **Kraus**
Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)

113 *Political Problems of the British Commonwealth of Nations* (3) **Kraus**
From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Not offered 1963–64.)

117-18 *Political Theory: the Nature and Growth of Political Thought in the West* (3-3) **Kraus**
First half: from Classical Antiquity to the Middle Ages; the forging of the western

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

political tradition. *Second half:* from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

Conner

119–20 *Foundations of American Democracy* (3–3)
Introduction to political thought in the United States from colonial times to the present. (Academic year—evening.)

West

121–22 *The Constitution of the United States* (3–3)
Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights. (Academic year—day and evening; summer 1963—Political Science 121 (3).)

Riddick

125 *Legislative Organizations* (3)
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1963–64 and alternate years: fall—evening.)

Brewer

141 *The Development of Legal Institutions* (3)
Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)

LeBlanc

145 *Political Parties and Politics* (3)
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day; summer 1963.)

Ludden

146 *Political Pressures and Public Reactions* (3)
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)

LeBlanc

151–52 *Public Administration* (3–3)
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (*First half:* fall—evening; summer 1963. *Second half:* not offered 1963–64.)

Slayman

157–58 *Current Problems in Domestic Politics* (1–1)
Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)

LeBlanc

166 *Field Work in Government* (3)
Practical training in the operation of the Federal Government, based on experience through assignment to selected government offices. Students will have an opportunity to observe and participate in government in the Washington area. Open only to students in the Public Affairs curriculum, School of Government, Business, and International Affairs. (Fall and spring—as arranged.)

Ludden, Nimer

171 *International Politics* (3)
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1963.)

Ludden

172 *International Organization: the United Nations* (3)
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening; summer 1963.)

Davis

177 *Recent Trends in Latin American Politics and Government* (3)
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. (Fall—evening; summer 1963.)

178 *International Politics in the Western Hemisphere* (3) Davis
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)

181–82 *International Law* (3–3) Brewer
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1963—Political Science 181 (3).)

187–88 *Current Problems in International Politics* (1–1) Slayman
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)

191 *Politics of the Middle East* (3) Nimer
Domestic and international politics of Turkey, Iran, Israel, and the Eastern Arab States and Principalities. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening.)

192 *Politics of North and Central Africa* (3) Nimer
Domestic and international politics of the Western Arab States, Ethiopia, Somalia, Liberia, and the newly independent states of former British, French, and Belgian Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Spring—evening.)

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region. (Spring—evening.)

197 *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3) Nimer
Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—evening; spring—day.)

THIRD GROUP

209–10 *Seminar: the Federal Government of the United States* (3–3) West
Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the presidency; and presidential policy leadership and control. (Academic year—evening.)

212 *Seminar: Comparative Government and Politics* (3) Kraus
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—evening.)

213 *Readings in Comparative Government and Politics* (3) Kraus
Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—evening; summer 1963.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarian-

ism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Fall—evening.) Kraus

220 *Reading Course in Political Theory* (3)
Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Spring—evening.) Conner

221–22 *Seminar: United States Constitution and the Judicial Function* (3–3)
A study of constitutional interpretation as an aspect of the political process. (Academic year—evening.) Bain

235 *Metropolitan Problems* (3)
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.) LeBlanc

245–46 *The American Political Process: Political Parties and Interest Groups* (3–3)
First half: readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.) Ludden

271–72 *Problems in International Politics and Organization* (3–3)
A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations. (Academic year—evening.) Ludden

273 *Public Opinion and Foreign Policy* (3)
Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—day.)

274 *Methods and Objectives of Foreign Policy* (3)
Examination of the objectives of foriegn policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives. (Spring—evening.) Davis

277 *Seminar: Latin American Government* (3)
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.) Davis

278 *Seminar: Latin American Political Philosophy* (3)
Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)

279 *Reading Course in International Affairs* (3)
Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. (Fall—evening; summer 1963.) Brewer

281–82 *Seminar: International Law and Relations* (3–3)
Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (*First half:* summer 1963. *Second half:* spring—evening.)

292 *International Politics and Government in the Middle East* (3) Nimer
Research and analysis of the international relations and major political problems of the Arab world and adjacent areas. (Spring—evening.)

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3)
Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

INSTITUTE FOR SINO-SOVIET STUDIES

212 *Seminar: Comparative Government and Politics* (3) Kraus
Common and distinctive characteristics of the political systems within the Soviet Bloc. Variations in such areas as ideology, party, and governmental elites; party organization and activity; the military and its place; policies which illuminate the rise of polycentrism. (Spring—evening.)

215–16 *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3) London
First half: an integrated survey of the most significant issues of the Communist Movement and its manifestations in the Soviet Union and Red China. The effects of communist policy, strategy, and tactics on Bloc relations with the Western alliance and the neutral areas. *Second half:* examination of the political ramifications of the International Communist Movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America. (Academic year—evening.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Crucial theoretical problems, such as the nature of revolution, the dictatorship of the proletariat, the transition to communism, imperialism and national liberation in their development from Marx and Engels to Lenin, Khrushchev, and Mao Tse-tung. (Fall —evening.)

227 *Seminar: the East European Satellites* (3)
Survey: political, economic, and social conditions in the East-Central European Soviet satellites; emphasis on their relations with the USSR, the Warsaw Pact alliance, and their affiliation with the Council of Mutual Economic Assistance. Yugoslavia and Albania (break with Moscow and alliance with Peking). (Fall and spring—evening.)

230 *Seminar: Operational Techniques of International Communism* Metzl
(3)
Strategy and tactics of the International Communist Movement in the post-Stalin period, with emphasis on the *modus operandi* of Communist Parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements. (Fall and spring—evening.)

239 *Seminar: Legal Order in the USSR—a Survey of Soviet Law* Ramundo
(3)*
Soviet legal system with particular emphasis upon the conventional nature of many of the Soviet solutions to the problem of bringing order to society; the unique Soviet features, such as "economic law," "socialist legality," the role of the Communist Party, and the "collective" as an arm of the law; and the impact of the legal system upon the individual. (Fall—evening.)

* Graduate students wishing to register for Political Science 238 in the spring semester may, with the approval of the adviser, register for Law 493 *Soviet Law* (2) and be given supplementary assignments equivalent to one additional semester hour.

239 *Seminar: Communist Chinese Constitutional Law* (3)
Communist China's legal system; its unique features and differences with the Soviet Constitution; the constitutional role of the Communist Party and the Communist ideology; the impact of the Chinese legal system upon the lives of the individuals. (Fall and spring—evening.)

265 *Seminar: Communist Chinese Foreign Policy and Strategy* (3)
The external policies of Communist China and its relations with Bloc and non-Bloc countries; emphasis on Sino-Soviet relations; the world objectives of Chinese Communist leaders; Peking's international propaganda; foreign economic relations; expansionist intentions toward South and Southeast Asia. (Fall and spring—evening.)

267 *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)
Relations between the Communist Bloc and the former colonial countries in Asia and Africa; Soviet and Communist Chinese economic and political infiltration of the new states; Sino-Soviet encroachment in Latin America. (Fall and spring—evening.)

270 *Seminar: Problems of Soviet Political Strategy—Case Studies* (3) Garthoff
Analysis of a selected major Soviet foreign political problem, undertaken partly by each student individually and partly by the seminar, to clarify the various international political, military-political, economic, propaganda, and other factors which enter into Soviet policy-making. Assignment of individual problems will be based on the particular interests and background of each student. (Spring—evening.)

288 *Seminar: Communist Military Policy and Strategy* (3) Wolfe
Soviet developments in the area of military policy and strategy, with some attention to questions of intra-Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought. (Fall and spring—evening.)

294 *Seminar: International Politics and Government in the Pacific Area* (3)
The Yenan period; Communist growth from 1937 to 1945; military developments; the breakdown of the united front and the triangular Communist-Kuomintang-Japanese struggle; special features of Chinese Communists during this period. American mediation and the second civil war, 1945–1949. The Chinese People's Republic; social, economic, and political developments; changes in the party line and their reflections in foreign policy. (Spring—evening.) Hinton

296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3)
The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian Communist states; local Communist parties since World War II; Sino-Soviet rivalry. (Spring—evening.)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers political science courses listed below for students in the following special programs: Air Force Advanced Management Program, the War College Programs. The Staff

260 *Fundamentals of National Power** (3)

* Limited to students in the Master of Arts in International Affairs program at the Army War College, National War College, Air War College, and Navy War College.

261 *International and United States Foreign Policy** (3) The Staff

262 *National Security Policy of the United States** (3) The Staff

283 *Topics in International Law* (3) Brewer
A consideration of theory, problems, and cases in the public law of nations, including the law of peace and the law of war.

285 *Diplomacy Since World War II* (3) Jordan
Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

287 *American Military Policy* (3) Eitler
Examination of the nature of military policy and its relation to domestic and foreign policy, the historical element, organization within the military establishment for policy making.

297 *Readings in International Affairs** (1 to 2) Ludden
Directed individual readings in core-curriculum subjects of the war college programs.

PSYCHOLOGY†

FIRST GROUP

1 *General Psychology*† (3) The Staff
The fundamental principles underlying human behavior. (Fall and spring—day and evening; summer 1963.)

5-6 *Principles and Methods of Psychology*† (3–3) Walk and Staff
Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Required of all psychology majors, who should take the course early in the major. May be taken without Psychology 1. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)

6 *Psychology of Adjustment* (3) **(Formerly Psychology 4)** The Staff
Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1963 (offered as Psychology 4).)

22 *Introduction to Educational Psychology* (3) J. Johnson
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day.)

25 *Child Psychology* (3) E. Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1963.)

SECOND GROUP†

101 *Abnormal Psychology* (3) Nolan, Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psy-

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* Limited to students in the Master of Arts in International Affairs programs at the Army War College, National War College, Air War College, and Naval War College.

† Psychology 1 or 5-6 is prerequisite to all other courses in Psychology.

chology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1963.)

129 *Introduction to Counseling* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. (Fall—evening; summer 1963.) Hunt

131 *Psychological Tests* (3)
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. (Fall—evening; spring—day; summer 1963.) Mosel

144 *Personnel Psychology* (3)
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.) Tuthill

156 *Psychology of Propaganda and Public Opinion* (3)
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (Spring—evening; summer 1963.)

THIRD GROUP

220 *Seminar: Abnormal Psychology* (3) Hunt (Fall
An intensive study of selected problems in the field of abnormal psychology.
—day; spring—evening.) Phillips

225 *Seminar: Mental Hygiene* (3)
A study of mental health problems with special attention to needs of counselors, teachers, and others working with children and adolescents. (Fall—evening; spring—day.) Mosel

231 *Test Construction* (3)
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics. (Fall—evening.) E. Johnson

233 *Individual Psychological Testing* (3)
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7. (Fall and spring—day.) Mosel

234 *Seminar: Test Theory* (3)
Development of the axiomatic-deductive theory underlying the major notions in the construction, evaluation, and application of psychological tests. (1964-65 and alternate years.) Hunt

235 *Seminar: Psychological Measurement* (3)
Advanced instruction in the use and interpretation of psychological tests, with emphasis upon group tests; survey of recent research in psychological measurement. Prerequisite: a course in psychological or educational measurement. (Spring—evening.) Mosel

244 *Seminar: Job Analysis and Evaluation* (3) Mosel
(Summer 1963.)

245 *Seminar: Employee Motivation and Morale* (3)
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of forms, the informal organization, and job design. (Spring—evening.)

246 *Seminar: Personnel Measurement Techniques* (3) Mosél
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (Fall—evening.)

299-300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

ROMANCE LANGUAGES AND LITERATURES

FRENCH

1-2 *First-year French* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3-4 *Second-year French** (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: French 1–2 or two years of high school French. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9-10 *French Conversation and Composition* (3–3) The Staff
Prerequisite: French 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

49 *French Readings for Nonmajor Students* (3) Frey and Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1963.)

51-52 *Survey of French Literature and Civilization** (3–3) Metivier
The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening.)

SPANISH

1-2 *First-year Spanish* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

* French 3-4 or Spanish 3-4 is required and French 51-52 or Spanish 51-52 is recommended as prerequisite to all second-group courses.

3–4 *Second-year Spanish** (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. Prerequisite: Spanish 1–2 or two years of high school Spanish. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *Spanish Conversation and Composition* (3–3) The Staff
Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

49 *Spanish Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

51–52 *Survey of Spanish Literature and Civilization** (3–3) Supervia
The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

SLAVIC LANGUAGES AND LITERATURES

1–2 *First-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—evening. *Second half:* fall—evening; spring—day and evening.)

9–10 *Russian Conversation* (3–3) The Staff
Listening comprehension and oral practice. Prerequisite: Russian 3–4 or permission of the instructor. Workshop fee, $6 a semester. (Academic year—evening.)

47 *Beginning Russian for Reading Examination Candidates* (0) The Staff
For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, $108. (Fall—evening.)

49 *Russian Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4 or 47 or the equivalent. (Spring—evening.)

91–92 *Introduction to Russian Literature* (3–3) Medish
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion. (Academic year—day.)

* French 3–4 or Spanish 3–4 is required and French 51–52 or Spanish 51–52 is recommended as prerequisite to all second-group courses.

SOCIOLOGY AND ANTHROPOLOGY

SOCIOLOGY

FIRST GROUP

2 *Man, Culture, and Society II** (3) — The Staff
(Formerly Sociology and Anthropology 1)
Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. (Fall and spring—day and evening; summer 1963.)

1] *American Social Problems* (3) — Nathan
(Formerly Sociology and Anthropology 2)
Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment. (1963–64 and alternate years: fall—day.)

SECOND GROUP

120 *Aging in Modern Society* (3) — Nathan
Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment; the social role of the aged. (1963–64 and alternate years: spring—day.)

2] *Fields of Social Work* (3)
Introduction to the nature and scope of social work; the development of social work program; functions of social case work, social group work, and social action. (1963–64 and alternate years: fall-evening.)

124 *Medical Sociology* (3) — Nathan
Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1964–65 and alternate years.)

26 *Urban Sociology* (3)
The place of the city in the larger society: growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1963–64 and alternate years: spring—day.)

25] *Race and Minority Groups* (3)
Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1963–64 and alternate years: fall—day.)

27 *Social Stratification: Class and Status* (3) — Nelson
(Formerly Sociology and Anthropology 161)
Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1964–65 and alternate years.)

31] *Social Institutions* (3)
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1964–65 and alternate years.)

32 *Courtship and Marriage* (3) — Stephens
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selections, factors in marital adjustment; prediction and counseling. (1963–64 and alternate years: spring—day.)

* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

133 *The Family* (3) Stephens
Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization. (1964–65 and alternate years; summer 1963.)

135 *Juvenile Delinquency* (3) Perian
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1964–65 and alternate years.)

136 *Criminology* (3) Perian
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1964–65 and alternate years.)

137 *Sociology of Law* (3)
The law as a social phenomenon and an agency of social control. Sociological analysis of particular problems of legal concepts, doctrine, and institutions. (1963–64 and alternate years: spring—evening.)

140 *Military Sociology* (3)
The study of the military establishment as one of the important institutions of modern society; an analysis of the distinctive forms of military organization; the social role of the professional military man. (1963–64 and alternate years: spring—evening.)

144 *Mass Communications* (3)
The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1964–65 and alternate years.) Stephens

146 *Industrial Sociology* (3)
Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale. (1964–65 and alternate years.) Stephens

147 *Sociology of Large Organizations* (3)
Sociological analysis of the structural characteristics of large complex organizations; individual accommodations to such organizations; the impact of the large organizational pattern on American social life. (1964–65 and alternate years.) Schooler

148 *Methods of Social Research* (3)
(Formerly Sociology and Anthropology 181)
Analysis of social research techniques and the scientific method; application to social data of the case study, social survey, statistical, sociometric, and experimental methods. (1963–64 and alternate years: fall—day.) Stephens

149 *Development of Social Theory* (3)
Systematic study of the important schools of sociological theory, both European and American developments; and evaluation of the scientific contributions of each school. (1963–64 and alternate years: spring—day.)

THIRD GROUP

221 *Seminar: Current Trends in Sociology* (3) Geiser
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (1964–65 and alternate years.)

225 *Seminar: Small Groups* (3)
General characteristics of small groups and their measurement; sociography of groups; evaluation of small group theory and sociometry; other techniques of small group research. (1963–64 and alternate years: fall—as arranged.) Geiser

226 *Problems of Underdeveloped Areas* (3)
Characteristics and problems of underdeveloped areas; the interrelationship of demographic, economic, social, and cultural factors; measures and techniques to introduce cultural changes. (1964–65 and alternate years; summer 1963.)

228 *Criminal Behavior: Research and Theory* (3) Geisert
A re-evaluation of theories of criminal and deviant behavior based on recent research findings; implications for the correction and prevention of criminal behavior. (1964–65 and alternate years.)

235 *Social Movements* (3)
(Formerly Sociology and Anthropology 162)
Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and showing the way social movements develop. (1963–64 and alternate years: spring—as arranged.)

241 *Population Problems* (3)
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control. (1964–65 and alternate years.)

295–96 *Research* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

ANTHROPOLOGY

FIRST GROUP

1 *Man, Culture, and Society I** (3) The Staff
(Formerly Sociology and Anthropology 51)
The physical evaluation of man and the origins and development of culture, including a survey of the topic divisions of the field. (Fall and spring—day and evening; summer 1963.)

SECOND GROUP

152 *Physical Anthropology* (3)
A survey of human biology. The mechanisms of speciation and the race process, including their cultural determinants. (1963–64 and alternate years: spring—evening.)

153 *Psychological Anthropology* (3) Gallagher
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (1963–64 and alternate years: fall—day; summer 1963.)

154 *Primitive Economics* (3) Gallagher
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non-Western societies. (1963–64 and alternate years: spring—day.)

155 *Primitive Religion* (3) Campbell
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (1964–65 and alternate years.)

161 *Language and Culture* (3) Gallagher
(Formerly Sociology and Anthropology 143)
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (1963–64 and alternate years: fall—day.)

* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

172 *Native People of the New World* (3) Gallagher
A survey of representative Indian groups of the Americas from primitive bands to high civilizations, stressing the patterned nature of diverse cultural responses to universal problems of human existence. (1963–64 and alternate years: spring—day.)

173 *Cultures of the Pacific* (3) Campbell
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1964–65 and alternate years.)

182 *New World Archeology* (3) Gallagher
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1963–64 and alternate years: spring—day.)

183 *Old World Archeology* (3) Campbell
A survey of the culture history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1963–64 and alternate years: fall—day.)

192 *Anthropological Theory* (3) Campbell
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (1963–64 and alternate years: fall—evening.)

193 *Anthropological Methods* (3) Campbell
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1964–65 and alternate years.)

THIRD GROUP

261 *Cultural Origins of the New World* (3) Campbell
(1963–64 and alternate years: fall—as arranged.)

262 *Applied Anthropology* (3) Gallagher
(Formerly Sociology and Anthropology 155)
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1964–65 and alternate years.)

263 *Culture, Contact, and Change* (3)
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (Not offered 1963–64.) Campbell

265 *Cultural Ecology* (3)
A cross-cultural examination of the relationship of technology to the natural world. (1964–65 and alternate years.) The Staff

285–86 *Research in Anthropology* (arr.)
(Academic year—as arranged; summer 1963.) The Staff

289–90 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following course for students in the War College programs of the College of General Studies.

263 *Culture, Contact, and Change* (3)

SPEECH

II *American Speech for Foreign Students* (3) — Bielski

Class limited to foreign born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5. (Fall and spring—day and evening; summer 1963.)

1 *Effective Speaking* (3) — Leggette and Staff

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2. (Fall and spring—day and evening; summer 1963.)

2 *Persuasive Speaking* (3) — Henigan, Sanders

A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)

STATISTICS

FIRST GROUP*

51 *Introduction to Business and Economic Statistics* (3) — The Staff

Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening; summer 1963.)

52 *Mathematics of Finance* (3) — The Staff

Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day and evening.)

53 *Introduction to Statistics in Psychology and Education* (3) — The Staff

Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening.)

91 *Principles of Statistical Methods*† (3) — The Staff

Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall—evening; spring—day.)

SECOND GROUP

104‡ *Statistics in Psychology and Education* (3) — Bright

Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education. Laboratory fee, $9. (Fall—Saturday morning; summer 1963.)

* Of first-group courses, Statistics 91, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

† Statistics 91 for Statistics majors, for students in engineering and in the biological and physical sciences.

105 *Statistics in Psychology and Education* (3) Bright
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, $9. (Spring—Saturday morning; summer 1963.)

106 *Factor Analysis* (3)
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, $9. (Fall—evening.)

107 *Statistics for Engineers* (3) The Staff
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1963.)

110 *Quality Control Techniques* (3)
Applications of probability and distribution theory to industrial control problems; use of quality control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1964-65 and alternate years.)

111 *Business and Economic Statistics I* (3) Johnson
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)

112 *Business and Economic Statistics II* (3) Johnson
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)

117 *Analysis of Variance I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, $9. (Fall—evening; summer 1963.)

118 *Correlation and the Chi-square Test I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, $9. (Spring—evening.)

122 *Forecasting Principles and Techniques* (3) Johnson
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)

123 *Introduction to Econometrics* (3) Johnson
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)

155 *Introduction to Mathematical Probability* (3) The Staff
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening; summer 1963.)

157–58 *Mathematical Statistics* (3–3) Kupperman
Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)

187 *Theory of Sampling* (3) Bright
Problems of sampling and sample design. Admission by permission of the instructor. (Fall—evening.)

188 *Nonparametric Statistical Inference* (3) Bright
Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (Spring—evening.)

189–90 *Mathematical Probability and Applications* (3–3) Geisser
Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)

193 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Spring—evening.)

194 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of complex variable theory necessary for their solution Prerequisite: differential and integral calculus. (Fall—evening.)

195–96 *Reading and Research in Statistics* (arr.) The Staff
(Academic year—as arranged.)

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3) The Staff
In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor. (Not offered 1963–64.)

THIRD GROUP*

207–8 *Operations Analysis* (3–3) Bright
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. Admission by permission of the instructor. (1964–65 and alternate years.)

217–18 *Experimental Design* (3–3)
Advanced theory of the applications of the linear and other hypotheses to experimental design. (Academic year—evening.)

257–58 *Advanced Mathematical Statistics I* (3–3) Greenhouse
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Academic year—evening.)

259–60 *Advanced Mathematical Probability* (3–3) Kullback
Modern theories and asymptotic laws: elementary theory of definite integration; limit theorems in probability. (Academic year—evening.)

261–62 *Information Theory for Engineers* (3–3)
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure theoretic). Measures of information, entropy, and their properties Discrete stochastic sources, message ensembles. The

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses

transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1964–65 and alternate years.)

263–64 *Advanced Mathematical Statistics II* (3–3) Kupperman
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Academic year—evening.)

265–66 *Multivariate Analysis* (3–3) Geisser
A year course, credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)

267–68 *Characteristic Functions* (3–3)
A year course, credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1964–65 and alternate years.)

269 *Sequential Testing* (3)
(1964–65 and every third year.)

270 *Statistical Decision Theory* (3)
(1964–65 and every third year.)

271–72 *Statistical Information Theory* (3–3) Kullback
A year course, credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison or experiments. (Academic year—evening.)

273–74 *Stochastic Processes* (3–3) Kullback
A year course, credit is not given for the first half until the second half is completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff
Admission by permission of the instructor. (Academic year—as arranged.)

297 *Seminar: Problems in Mathematical Statistics* (3)
(1963–64—as arranged; summer 1963.) The Staff

299–300 *Thesis* (3–3)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Financial Management Program, Air Force Advanced Management Program, Engineering Administration, Urban Affairs Administration, and Health Care (including Hospital) Administration.

101–2 *Basic Principles of Statistical Methods* (3–3)
Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.

119 *The Bases of Statistical Decision Making* (arr.)
Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3)
Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses.

250 *Managerial Statistics and Quality Control* (3)
The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization. Prerequisite: Statistics 107 or the equivalent.

ZOOLOGY

BIOLOGY

FIRST GROUP

1-2 *Introductory Biology* (4–4) The Staff
An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences* (4); fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences* (4); fall and spring—day and evening; summer 1963.)

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* For the academic year 1962–63.

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* These Officers of Administration are responsible for the Master's programs offered at the War Colleges by the College of General Studies, with the cooperation of the School of Government, Business, and International Affairs.

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington.

The purpose of The George Washington University expressed in the words of the Bill of Incorporation, introduced and subsequently enacted by Congress in 1821, was to realize "the aspirations of Washington, Jefferson, and Madison, for the erection of a university at the seat of the Federal Government." This central idea of a university functioning in the Capital of the Nation, nonsectarian, free of sectional limitations, conscious of its wide American relationships, and open to the ever-increasing international influences which bear upon it, has been continuous through nearly a century and a half.

The purpose of this University, therefore, has been to develop the university ideal in the place of greatest national significance, flexible before the changing needs of its growing national constituency and loyal to the traditional principles of learning and research, in providing through disciplined reason, wisdom for the individual and his society.

The University as it is now organized consists of Columbian College of Arts and Sciences; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools of Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

LOCATION

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the departments of the Government, including the Department of State, the Treasury Department of the Treasury, the Department of Justice, the Department of the Army, the Navy Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

EDUCATIONAL FACILITIES

Buildings, grounds, and equipment are valued at approximately $27,000,000.

The buildings of Columbian College of Arts and Sciences; the Graduate Council; the National Law Center; the Law School and the Graduate School of Public Law; the School of Engineering and Applied Science; the School of Pharmacy; the School of Education; the School of Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; the University Hospital and Clinics; and the University Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

John Quincy Adams Hall, 730 Nineteenth Street. Residence hall for men.

Bacon Hall, 2000 H Street. Named in honor of the late Joel Smith Bacon, President of the University from 1843 to 1854. Offices of the Dean of the Graduate Council, the Dean of the Graduate School of Public Law, the Dean and Assistant Dean for Sponsored Research, the Assistant to the President (Special Projects), the Development Division, the Management Research Group, the Educational Counselor. Offices and lounge for the Law Faculty; the Alumni Office; Alumni Reception Room.

Binney Hall, 2018 Eye Street. Named in honor of the late Joseph Getchell Binney, President of the University from 1855 to 1858. Offices, classrooms, and laboratories of the Reading Clinic.

John C. Calhoun Hall, 2100 Eye Street. Residence hall for men.

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Vice President and Treasurer, the Cashier, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

William H. Crawford Hall, 2119 H Street. Residence hall for women.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Everglades Apartments, 2223 H Street. Residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2010–12 H Street.

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean and the Assistant Dean of the School of Government, Business, and International Affairs; the departments of Economics, Government and Business, History, International Affairs, Political Science, and Statistics. Offices of the Air Force Advanced Management Program, Air Force Military and Economics Program, Institute for Sino-Soviet Studies, and Navy Graduate Financial Management Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations; lounges, reading rooms.

Hospital and Clinics, Washington Circle.

Hospital Staff Office Building, 818 Twenty second Street.

International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, the Speech Clinic, and the housing officer; Athletic Ticket Office.

Dolley Madison Hall, 736 Twenty-second Street. Residence hall for women.

James Monroe Hall, 2115 G Street. Offices of the deans of Columbian College of Arts and

Sciences, the Division of University Students, the School of Education; the departments of Education, English (English and American Literature), Germanic Languages, Journalism, Mathematics, Psychology, and Secretarial Studies; classrooms.

Office of the President, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Administrative Secretary, Assistant to the Dean of Faculties for Planning, and department of Classical Languages.

Placement Office, 2114 G Street.

Samson Hall, 2036 H Street. Named in honor of the late George Whitefield Samson, President of the University from 1859 to 1871. Comptroller's Office; Disbursing Office; offices of the departments of Chemistry, Geology, and Physics.

School of Medicine, 1335–1339 H Street. Offices of the Dean, Associate Dean, School of Medicine Admissions, and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; Medical Alumni Association; and University Medical Bookstore.

Sorority Halls:

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.

2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.

2131 G Street. Apartment of Delta Gamma Sorority.

2137 F Street. Apartment of Alpha Epsilon Phi Sorority.

802 Twenty first Street. Apartment of Phi Sigma Sigma Sorority.

Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project.

Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Law School; offices of the National Law Center and the Dean, Associate Dean, and Faculty of the Law School; library; and lecture halls.

Hattie M. Strong Hall, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University. Residence hall for women.

Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.

Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of the late Charles H. Tompkins, former Trustee of the University. Offices of the Dean, Assistant Deans, and Faculty of the School of Engineering and Applied Science; the classrooms and laboratories; The Center for Measurement Science; Electronics Research Project; Computer Research Project, National Aeronautics Space Administration; Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.

University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.

University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The Library, rooms of the Board of Trustees, Faculty Conference Room, classrooms, office of the Dean of the National Law Center.

The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of The George Washington University Cancer Clinic.

Welling Hall, 814 Twenty-second Street. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894. Residence hall for men.

Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Offices of the Dean of Women and College of General Studies Admissions; meeting rooms for student activities.

Building A, 2026 G Street. Offices of the Department of Romance Languages.

Building A-A, 2129 Eye Street. Offices of the Computer Programs Research Project and Area Redevelopment Project.

Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.

Building B-B, 2204 Eye Street. Offices and laboratories of the Medical Instrumentation Project.

Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Botany, Geology, and Zoology; language laboratories; classrooms.

Building C-C, 2035 H Street. Offices of the Center for Behavorial Sciences and Faculty offices.

Building D, 2013 G Street. Offices of the Business Manager, Maintenance; Mail Room.

Building D-D, 2120 Eye Street. Office of the Vice President for Plans and Resources.

Building E, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Assistant to the Dean of Faculties for Planning, and Administrative Secretary; office of the Department of Classics, Languages.

Building E-E, 816 Twenty-first Street. Offices and seminar rooms of Health Care (including Hospital) Administration.

Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies.

Building G, 712 Twentieth Street. Offices of the Department of English (Composition section); Academic Editor.

Building H, 714–16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.

Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography and Regional Science.

Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.

Building K, 817 Twenty-third Street. Classrooms, playing court, locker rooms, and offices of the Department of Physical Education for Women.

Buildings M and N, 716–18 Twenty-first Street. Offices of the departments of Slavic Languages and Philosophy; offices and laboratories of the Testing and Counseling Center.

Building O, 2106 G Street. Offices of the Department of Religion and University Chapel.

Building P, 2108 G Street. Offices of the Student Health Services, Adviser to Special Students in Columbian College, and of the University Historian.

Building Q, 2029 H Street. Offices of the Dean of Men, the Director of Veterans Education, and the Plant Engineer.

Building R, 2027 H Street. Offices of the Director of Athletics, and the Athletic Staff.

Building S, 2025 H Street. Offices of the Department of Physical Education for Men and Public Relations.

Building T, 2110 G Street. Offices of the Dean of the Summer Sessions; Chairman of Committee on Scholarships; International House (see International House).

Building U, 729 Twenty-second Street. Driver Behavior Research Project.

Building V, 2114 H Street. Research laboratories of the Department of Physics.

Building W, 2128 H Street. Offices of the Dean and Faculty of the School of Pharmacy; pharmacy laboratories; classrooms.

Building X, 2107 H Street. Offices of the departments of Art and Sociology and Anthropology; Music Program; Population Research Project; Faculty offices.

Building Y, 802 Twenty-first Street. Offices of the Department of Government and Business

Building Z, 708 Twenty-second Street. Offices of the Patent, Trade-Mark, and Copyright Foundation.

LIBRARY FACILITIES

The Library collections of the University are housed in the University Library and in the departmental libraries of law and medicine.

These collections contain approximately 371,000 volumes—285,000 in the University Library, 60,000 in the Law Library, and 26,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 2,100 periodicals.

Information concerning the use of the Libraries may be obtained at the Library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibits are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

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The George Washington University

Bulletin

DIVISION OF UNIVERSITY STUDENTS

1963-64

WASHINGTON 6, D. C.
MAY 1963
Vol. LXII No. 12

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Medical Alumni Association	1335 H Street NW
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In Arts and Sciences	
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Doctor of Philosophy	Dean of The Graduate Counc
In Education	Dean of The School of Educatio
In Engineering or Applied Science	Dean of The School of Engineerin and Applied Scienc
In Law	Dean of The Graduate School of Public La
In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care (including Hospital) Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs	Dean of The School of Government, Business, and International Affair
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Women	Dean of Women, Woodhull House
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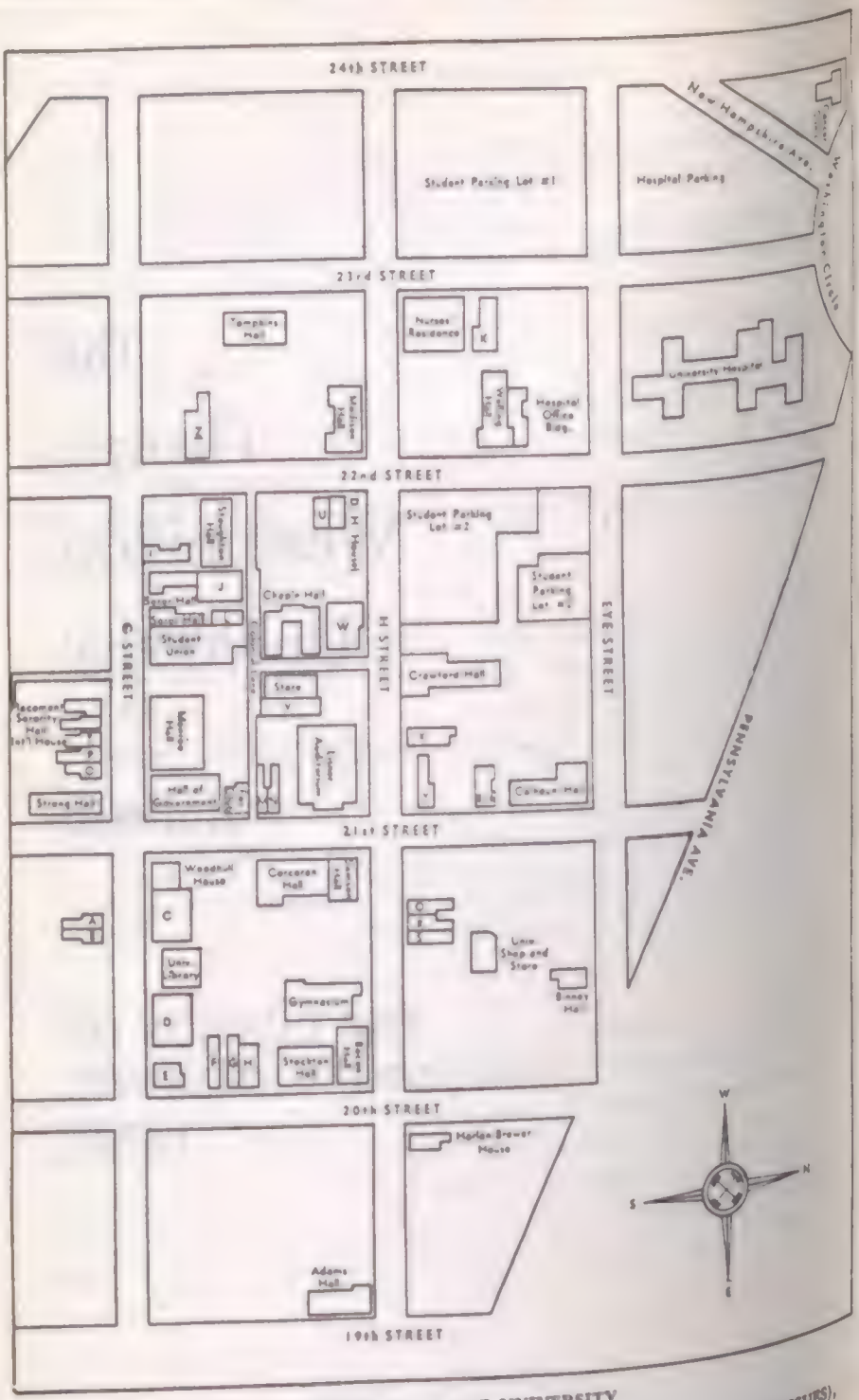
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THE DIVISION OF UNIVERSITY STUDENTS
1963-64

VOLUME LXII MAY 1963 NUMBER 12



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THE CALENDAR

1963

July

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
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August

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September

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October

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November

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December

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1964

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March

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June

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July

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August

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September

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October

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November

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December

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20	21	22	23	24	25	26
27	28	29	30	31	....	....

THE CALENDAR 1963–64

FALL SEMESTER:

Placement tests	Sept 16	Mon
Registration	Sept 19–21*	Thurs–Sat
Classes begin	Sept 23	Mon
Veterans Day (holiday)	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
Classes resume	Jan 2	Thurs
Last day of fall-semester classes	Jan 15	Wed
Examination period	Jan 20–25	Mon–Sat

SPRING SEMESTER:

Placement tests	Jan 27	Mon
Registration	Jan 30–Feb 1*	Thurs–Sat
Spring-semester classes begin	Feb 3	Mon
Winter Convocation (holiday)	Feb 22	Sat
Spring recess	March 23–28	Mon–Sat

SUMMER SESSIONS:†

Registration for eight-week term	June 22	Mon
Classes begin	June 23	Tues
Independence Day (holiday)	July 4	Sat
Eight-week term ends	Aug 14	Fri

REGISTRATION FOR FALL SEMESTER 1964–65

Sept 17–19 ..... Thurs–Sat

* Thursday and Friday, from 12:00 to 8:00 P.M.; Saturday, from 10:00 A.M. to 1:00 P.M.

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THE DIVISION OF UNIVERSITY STUDENTS

John Gage Allee, Jr., Ph.D., *Dean of the Division of University Students*
Elizabeth Truman Wright, A.M., *Assistant Dean of the Division of University Students*

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature:—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of Columbian College of Arts and Sciences, which offers work leading to Associate's, Bachelor's, and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine; Law; Engineering and Applied Science; Pharmacy; Education; and Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; and the Summer Sessions.

The George Washington University is a privately endowed University located on a well planned campus in the center of Washington within a few blocks of the White House. The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

EDUCATIONAL FACILITIES

The buildings of Columbian College of Arts and Sciences; the Graduate Council; the National Law Center; the Law School and the Graduate School of Public Law; the School of Engineering and Applied Science; the School of Pharmacy; the School of Education; the School of Government, Business, and International Affairs; the College of General Studies; the Division of University Students; the Division of Air Science; the University Hospital and Clinics; and the University Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

John Quincy Adams Hall, 730 Nineteenth Street. Residence hall for men.

Bacon Hall, 2000 H Street. Named in honor of the late Joel Smith Bacon, President of the University from 1843 to 1854. Offices of the Dean of the Graduate Council, the Dean of the Graduate School of Public Law, the Dean and Assistant Dean for Sponsored Research, the Assistant to the President (Special Projects), the Development Division, the Management Research Group, the Educational Counselor. Offices and lounge for the Law Faculty; the Alumni Office; Alumni Reception Room.

Binney Hall, 2018 Eye Street. Named in honor of the late Joseph Getchell Binney, President of the University from 1855 to 1858. Offices, classrooms, and laboratories of the Reading Clinic.

John C. Calhoun Hall, 2100 Eye Street. Residence hall for men.

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Vice President and Treasurer, the Cashier, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

William H. Crawford Hall, 2119 H Street. Residence hall for women.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Everglades Apartments, 2223 H Street. Residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2010–12 H Street.

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean and the Assistant Dean of the School of Government, Business, and International Affairs; the departments of Economics, Government and Business, History, International Affairs, Political Science, and Statistics. Offices of the Air Force Advanced Management Program, Air Force Military and Economics Program, Institute for Sino-Soviet Studies, and Navy Graduate Financial Management Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations; lounges, reading rooms.

Hospital and Clinics, Washington Circle.

Hospital Staff Office Building, 818 Twenty-second Street.

International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, the Speech Clinic, and the housing officer; Athletic Ticket Office.

Dolley Madison Hall, 736 Twenty-second Street. Residence hall for women.

James Monroe Hall, 2115 G Street. Offices of the deans of Columbian College of Arts and Sciences, the Division of University Students, the School of Education; the departments of Education, English (English and American Literature), Germanic Languages, Journalism, Mathematics, Psychology, and Secretarial Studies; classrooms.

Office of the President, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Administrative Secretary, Assistant to the Dean of Faculties for Planning, and department of Classical Languages.

Placement Office, 2114 G Street.

Samson Hall, 2036 H Street. Named in honor of the late George Whitefield Samson, President of the University from 1859 to 1871. Comptroller's Office; Disbursing Office; offices of the departments of Chemistry, Geology, and Physics.

School of Medicine, 1335–1339 H Street. Offices of the Dean, Associate Dean, School of Medicine Admissions, and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; Medical Alumni Association; and University Medical Bookstore.

Sorority Halls:

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.
2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.
2131 G Street. Apartment of Delta Gamma Sorority.
2137 F Street. Apartment of Alpha Epsilon Phi Sorority.
802 Twenty-first Street. Apartment of Phi Sigma Sigma Sorority.

Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project.

Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Law School; offices of the National Law Center and the Dean, Associate Dean, and Faculty of the Law School; library, and lecture halls.

Hattie M. Strong Hall, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University. Residence hall for women.

Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.

Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of the late Charles H. Tompkins, former Trustee of the University. Offices of the Dean, Assistant Deans, and Faculty of the School of Engineering and Applied Science; the classrooms and laboratories; The Center for Measurement Science; Electronics Research Project; Computer Research Project, National Aeronautics Space Administration; Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.

University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.

University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The library, rooms of the Board of Trustees, Faculty Conference Room, classrooms, office of the Dean of the National Law Center.

The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of The George Washington University Cancer Clinic.

Welling Hall, 814 Twenty-second Street. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894. Residence hall for men.

Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Offices of the Dean of Women and College of General Studies Admissions; meeting rooms for student activities.

Building A, 2026 G Street. Offices of the Department of Romance Languages.

Building A-A, 2129 Eye Street. Offices of the Computer Programs Research Project and Area Redevelopment Project.

Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.

Building B-B, 2204 Eye Street. Offices and laboratories of the Medical Instrumentation Project.

Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Botany, Geology, and Zoology; language laboratories; classrooms.

Building C-C, 2035 H Street. Offices of the Center for Behavioral Sciences and Faculty offices.

Building D, 2013 G Street. Offices of the Business Manager, Maintenance; Mail Room.

Building D-D, 2120 Eye Street. Office of the Vice President for Plans and Resources.

Building E, 2003 G Street. Offices of the President, the Provost and Dean of Faculties, Assistant to the President, Associate Dean of Faculties, Assistant to the Dean of Faculties for Planning, and Administrative Secretary; office of the Department of Classical Languages.

Building E-E, 816 Twenty-first Street. Offices and seminar rooms of Health Care (including Hospital) Administration.

Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies.

Building G, 712 Twentieth Street. Offices of the Department of English (Composition section); Academic Editor.

Building H, 714–16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.

Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography and Regional Science.

Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.

Building K, 817 Twenty-third Street. Classrooms, playing court, locker rooms, and office of the Department of Physical Education for Women.

Buildings M and N, 716–18 Twenty-first Street. Offices of the departments of Slavic Languages and Philosophy; offices and laboratories of the Testing and Counseling Center.

Building O, 2106 G Street. Offices of the Department of Religion and University Chapel.

Building P, 2108 G Street. Offices of the Student Health Services, Adviser to Special Students in Columbian College, and of the University Historian.

Building Q, 2029 H Street. Offices of the Dean of Men, the Director of Veterans Education, and the Plant Engineer.

Building R, 2027 H Street. Offices of the Director of Athletics, and the Athletic Staff.

Building S, 2025 H Street. Offices of the Department of Physical Education for Men and Public Relations.

Building T, 2110 G Street. Offices of the Dean of the Summer Sessions; Chairman of Committee on Scholarships; International House (see International House).

Building U, 729 Twenty-second Street. Driver Behavior Research Project.

Building V, 2114 H Street. Research laboratories of the Department of Physics.

Building W, 2128 H Street. Offices of the Dean and Faculty of the School of Pharmacy; pharmacy laboratories; classrooms.

Building X, 2107 H Street. Offices of the departments of Art and Sociology and Anthropology; Music Program; Population Research Project; Faculty offices.

Building Y, 802 Twenty-first Street. Offices of the Department of Government and Business.

Building Z, 708 Twenty-second Street. Offices of the Patent, Trade-Mark, and Copyright Foundation.

LIBRARY FACILITIES

The Library collections of the University are housed in the University Library and in the departmental libraries of law and medicine.

These collections contain approximately 371,000 volumes—285,000 in the University Library, 60,000 in the Law Library, and 26,000 in the Medical Library. Approximately 10,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 2,100 periodicals.

Information concerning the use of the Libraries may be obtained at the Library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibits are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

THE DIVISION OF UNIVERSITY STUDENTS

J. G. Allee, Jr., *Dean;* Elizabeth Wright, *Assistant Dean*

THE DEAN'S COUNCIL*

I. B. Hansen, F. E. Johnston, J. W. Skinner

GENERAL INFORMATION

INTRODUCTORY

The Division of University Students was established in 1930 to make the regular course offerings of the University more generally available to members of this metropolitan community and others, not at the time candidates for degrees in this University. In this Division are registered students who wish to undertake university courses for credit or as auditors. University students may be employed in government or industry, taking courses to increase their vocational fitness or to inform them on new developments in the arts and sciences. They may be taking courses as a matter of personal interest for cultural enrichment. Such students may be candidates for higher degrees in other institutions, sent here for special work as part of a graduate program. They may be undergraduates, matriculated in other colleges, taking summer sessions courses only or courses for transfer during the regular academic year with the approval of their own institution. To serve members of such groups and others, not enrolled in degree-granting branches of the University, is the function of the Division of University Students.

ADMISSION

The University accepts both men and women. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone: FE 8-0250, extension 344.

* The Dean of Faculties, the Dean and the Assistant Dean of the Division are members ex officio of the Council.

Application for admission to *nondegree status* in the Division of University Students, should be received, with credentials when required, no later than the Friday preceding the first day of registration, as stated in the Calendar.

READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded) must apply for readmission in the Office of the Director of Admissions.

ENTRANCE REQUIREMENTS*

Good character and an academic background appropriate for the program of studies contemplated are required.

A person not working for a degree at this University will be considered for admission to the Division of University Students to take courses for which he has adequate preparation, as determined by the departments concerned.

SCHOLASTIC RECORDS

Scholastic records are required of

1. An applicant who graduated from high school within the previous two calendar years. Such an application must meet the following requirements for admission to Columbian College of Arts and Sciences.

   a) An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units† which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

   b) The principal's statement that the applicant is prepared to undertake college work.

   c) College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.

2. An applicant who has been subject to any form of academic or disciplinary action at any college or university within the previous calendar year.

Scholastic records may be required of

1. An applicant who has attended any college or university during the previous calendar year.

2. A former student of this University who was on probation or suspended and, since then, has attended another college or university.

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* Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

3. An applicant who has ever been subject to academic or disciplinary action.

When scholastic records are required, a student may be admitted for one semester or summer term only, pending receipt of records and under provisions stated by the Office of the Director of Admissions.

REGISTRATION

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions (see "Admission").

A student previously registered in the University who was not on-campus during the immediately preceding semester (summer sessions excluded), must apply for readmission in the Office of Admissions.

No registration for credit is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration.* Allowance for credit for work done concurrently will be at the discretion of the appropriate Committee on Admission and Advanced Standing.

TIME AND PLACE OF REGISTRATION

Registration for the Division of University Students is conducted in Building C, 2029 G Street NW., during the following periods: *fall semester,* September 19 and 20, 12:00 to 8:00 P.M.; September 21, 10:00 A.M. to 1:00 P.M. *Spring semester,* January 30 and 31, 12:00 to 8:00 P.M., February 1, 10:00 A.M. to 1:00 P.M.

FEES AND FINANCIAL REGULATIONS

Fees paid by students cover only a portion of the cost of their instruction and of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

By authorization of the Board of Trustees, the following fees have been adopted for the academic year 1963–64.

Tuition Fees

For each semester hour except for courses in Engineering and Applied Science	$36.00
For each semester hour in Engineering and Applied Science	40.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is

paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Special Fees

Admission tests (when required)	6.00–12.00
Late-registration fee, for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
For each examination to qualify for advanced standing and for each special examination	5.00
English test for foreign students (when required)	5.00
Laboratory checkout fee, for failure to check out of chemistry and pharmacy laboratory by the date deadline set by the instructor	3.00
Transcript fee, for each transcript of record	1.00

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees are due and payable in advance at the time of each registration.

The student may sign a contract at the time of each registration for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on the first working day* in November; one-third on the first working day* in December.

Spring Semester.—One-third at the time of registration; one-third on the first working day* in March; one-third on the first working day* in April.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

A student who fails to meet payments when due, but pays his fees within the following two weeks of the date on which payment is due, is charged a $2 service fee. A student who fails to meet payments within these two weeks after payment is due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a $5 reinstatement fee.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

* The University work week is Monday through Friday, inclusive.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice (see "Withdrawal", page 23).

In authorized withdrawals and changes in schedule, financial adjustments will be made as follows:

Fall Semester

Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

In no case will a refund be made of the first third of the total tuition charges. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Students in chemistry or pharmacy who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a $3 checkout fee. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

REGULATIONS

A student enrolled in the University is required to conform to the following University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Dean) for subsequent registration in any unit of the University.

* The University work week is Monday through Friday, inclusive.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student suspended for any cause may not attend classes during the period of suspension.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of this Division may be dismissed from the University.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

Graduate.—For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete).

THE QUALITY-POINT INDEX

Undergraduate.—Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

PROBATION

A student must maintain a quality-point index of at least 2.00, or be placed on probation. He remains on probation as long as his index is below 2.00.

SUSPENSION

A student whose index falls below 1.50 is subject to suspension.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. A student suspended twice for poor scholarship will not be readmitted.

EXAMINATIONS

Examinations are scheduled at the end of each semester or at the completion of the course.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations", pages 20 and 21.)

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within the Division of University Students.—A student may not change or drop courses (see "Withdrawal", above) or change his status to that of auditor except with the approval of the Dean.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Transfer within the University.—Transfer to or from the Division of University Students may be made only with the approval of the deans concerned.

Application for transfer to degree candidacy will be considered only after the completion of at least one semester in the Division of University Students.

The student currently or previously registered in this Division who wishes trans-

* The University work week is Monday through Friday, inclusive.

fer to degree candidacy should understand that consideration will be given to only those courses which are approved as applicable toward the degree sought and that a maximum of 45 semester hours of such credits earned in this Division can be so applied. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

Normally, all work toward a Master's degree must be done in residence in the degree-granting college or school.

CREDIT AND AUDIT

Credit is given only after registration for a course and satisfactory completion of the required work.

In special instances, with the permission of the instructor, a person may be registered as an *auditor* in a class without being required to take active part in the exercises or to take examinations, but no credit will be allowed for such attendance. A student who takes a course as an auditor may not take the same course later for credit.

An auditor may be admitted late in any semester or summer term with the permission of the instructor and department concerned.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education*; (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services†. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an ath-

* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

† See Rule (5) for exception.

letic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

The Personnel of the Office of the Dean of Men, Building Q, 2029 H Street NW., act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

Public Law 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

Public Law 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

Public Law 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the veterans adviser from the Office of the Dean of Men during the registration procedure.

Public Laws 16 and 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

THE READING CLINIC

The Reading Clinic, 2018 Eye Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $45; for individual instruction, $6 a lesson; for semi-individual instruction, $5 a lesson; for instruction in small groups with common reading difficulties, $3.75 a lesson ($3.25 for students currently registered in the University). All fees are payable in advance at the Office of the Cashier.

THE SPEECH CLINIC

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, aphasia, foreign accent, voice, and articulatory problems.

Fees.—There is no charge for the diagnosis. The fee for individual instruction is $7 an hour; for group instruction, $4 an hour. Fees are payable at the Office of the Cashier.

THE TESTING AND COUNSELING CENTER

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available to students enrolled in the University, to high school students, and to adults of the community.

The services are designed to assist individuals in the evaluation of their educational and vocational potentialities and objectives, diagnose academic difficulties, provide educational and vocational literature and information, and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and tests for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community clients, $65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

STUDENT LIFE

RESIDENCE HALLS

The University maintains eight residence halls. For detailed information, request the special bulletin, which is available at the offices of the Dean of Men and the Dean of Women.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the religious organizations of their choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

UNIVERSITY CHAPEL

The University Chapel is a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of University Chapel is available for counseling on personal problems.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which well over 150 private companies, as well as certain government agencies, participate. This program offers outstanding employment opportunities to persons seeking career positions.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business, industry, and government, which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center (see pages 27–28) are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1963 and in the academic year 1963–64. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the usual four years, a part-time student may complete the requirements and obtain a degree.

EXPLANATION OF COURSE NUMBERS

EXCEPT IN ENGINEERING AND APPLIED SCIENCE

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the instructor, and when the completion of additional work has been certified by the instructor.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the instructor, to qualified seniors; they are not open to other undergraduates.

IN ENGINEERING AND APPLIED SCIENCE

In Engineering and Applied Science courses numbered from 1 through 200 are planned for undergraduate credit; those numbered 201 and above are planned for graduate credit and may in certain instances be taken by qualified undergraduate students.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ANATOMY

Professors I. R. Telford *(Chairman)*, Paul Calabrisi
Associate Professors F. D. Allan, T. N. Johnson
Assistant Professors J. B. Christensen, J. C. Bartone

201 *Gross Anatomy* (8) — Calabrisi and Staff
For qualified nonmedical graduate students. Same as Anatomy 101. Laboratory fee, $30. (Fall—as arranged.)

203 *Human Embryology* (2) — Allan and Staff
For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8. (Fall—as arranged.)

204 *Neuroanatomy* (2) — Johnson and Staff
For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13. (Fall—as arranged.)

205 *Microscopic Anatomy* (3) — Telford and Staff
For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13. (Fall—as arranged.)

221–22 *Seminar* (1–1) — Telford and Staff
Research reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend. (Academic year: 1 hour a week—as arranged.)

249–50 *Introduction to Medical Research** (3–3) — The Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

295–96 *Research* (arr.) — The Staff
Fee to be arranged. (Academic year—as arranged.)

299–300 *Thesis* (3–3) — The Staff

ART

Professors D. C. Kline *(Chairman)*, W. A. MacDonald
Professorial Lecturer Grace Evans
Associate Professor L. P. Leite
Assistant Professors George Steiner, E. E. Harrison, D. H. Teller
Studio Lecturers on the Staff of the Corcoran School of Art Edmund Archer, Richard Lahey, Jessalee Sickman, Heinz Warneke, Jack Perlmutter, Alexander Russo, Eleanor Bookout, Joseph Carter, Richard Lafean, John Ruddley, Joseph Taney, Peter Thomas, Don Turano
Studio Lecturers in Applied Music R. H. Harmon, John Martin, Joseph Ott, Norman Scribner, John Stephens, Margaret Tolson, Richard Townsend, Jule Zabawa, Mary Apple

* This is an interdepartmental course. The student should register in the department directing his research.

ART HISTORY AND THEORY

FIRST GROUP

1 *Art Appreciation* (3) MacDonald
The language and function of art in its various media; the historical development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day; summer 1963.)

31–32 *Survey of Western Art* (3–3) Leite
A survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—evening.)

71–72 *Introduction to the Arts in America* (3–3) Kline
Painting, sculpture, and architecture of America, with selected references to the crafts and popular arts. *First half:* from Colonial beginnings to the Republican Age. *Second half:* from early 19th century to the present. (Academic year—day; summer 1963.)

SECOND GROUP

101 *Greek and Roman Architecture* (3) MacDonald
(Fall—evening.)

102 *Greek and Roman Sculpture* (3) MacDonald
(Spring—evening.)

103 *Medieval Art* (3) Evans
Architecture, sculpture, and painting from the formative states of Christian Art in the Byzantine Age through the Romanesque and Gothic periods. (Spring—evening; summer 1963.)

104 *Renaissance Art in Italy I* (3) Leite
The early developments from the 13th to the 15th century. (Fall—day.)

105 *Renaissance Art in Italy II* (3) Leite
The High Renaissance and Mannerism. (Spring—day.)

106 *Renaissance Art in the North* (3) Leite
The painting in the Netherlands, Germany, France, Spain, and Portugal. (Fall—day.)

107 *Eighteenth Century Art in Europe* (3) Evans
The development of painting, sculpture, and architecture in 18th century Europe. (Not offered 1963–64.)

109 *Nineteenth Century Art in Europe* (3) Leite
Painting and sculpture from Academism to Symbolism. (Fall—day.)

110 *Contemporary Art* (3) Leite
Painting and sculpture in 20th century Europe. (Spring—day.)

111 *Classical Archeology* (3) MacDonald
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day.)

112 *Art of Egypt and the Ancient Orient* (3) MacDonald
A study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Spring—day.)

113 *Baroque Art in Italy* (3) Evans
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy. (Fall—day.)

114 *Baroque Art in the North* (3) Evans
The development of painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Spring—day.)

115 *Christian Iconography* (3) Leite
The origins and development of Christian symbols and themes from Early Christian to modern times. (Not offered 1963–64.)

116 *Classical Iconography* (3) MacDonald
The origin and development of myths in classical art. (Not offered 1963–64.)

120 *Art of China and Japan* (3) Kline
The architecture, painting, and sculpture of China, Korea, and Japan. (Spring—day.)

141 *Interior Decoration* (3) Kline
The principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. (Not offered 1963–64.)

142 *House Planning* (3) Kline
The contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1963–64.)

143 *Folk Arts in America* (3) Kline
Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts; selected references to American folk music. (Summer 1963.)

THIRD GROUP

203 *Primitive Art** (3) Kline
The arts of prehistoric and primitive man in Europe in the pre-Columbian Americas, Oceania, and Africa. (Fall—day.)

207 *Modern Architecture* (3) Kline
The development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Not offered 1963–64.)

243 *Seminar in American Art* (3) Kline
(Fall—day.)

244 *Seminar in Naturalism and Realism* (3) Leite
A reading knowledge of French is desirable. (Not offered 1963–64.)

245 *Seminar in Romanticism* (3) Leite
A reading knowledge of French and German is desirable. (Not offered 1963–64.)

246 *Seminar in Classical Art* (3) MacDonald
(Fall—day.)

247 *Seminar in Symbolism* (3) Leite
(Not offered 1963–64.)

248 *Studies in Classical Art* (3) MacDonald
(Summer 1963.)

261–62 *Theory and Criticism* (3–3) MacDonald
The history of theory and criticism in Classical, Medieval, Renaissance, and Modern times. (*First half:* fall—day. *Second half:* not offered 1963–64.)

289–90 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

* May be taken for undergraduate credit with the approval of the instructor.

DRAWING AND PAINTING, SCULPTURE, COMMERCIAL ART, AND CERAMICS

FIRST GROUP

21–22 *Basic Design and Composition** (3–3) — Teller
The fundamentals of two- and three-dimensional design. Material fee, $10 a semester. (Academic year—day and evening; summer 1963—Art 21 (3).)

35–36 *Commercial Art I* (3–3) — Taney
Fundamentals of advertising and editorial layout. (Academic year—day and evening.)

41–42 *Drawing and Perspective* (3–3) — Russo
An introductory course in object and figure drawing and mechanical perspective. (Academic year—day and evening; summer 1963—Art 41 (3).)

51–52 *Ceramics I* (3–3) — Lafean and Staff
Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Material fee, $25 a semester. (Academic year—day and evening; summer 1963—Art 51 (3), Art 52 (3).)

57–58 *Introduction to Graphic Techniques* (3–3)
Exploration of the methods of intaglio, relief, serigraphy, and other composite methods. Material fee, $10 a semester. (Academic year—afternoon and evening.)

65–66 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) — The Staff
Primarily for nonmajors. (Academic year—day; summer 1963—Art 65 (3).)

81–82 *Sculpture I* (3–3) — Warneke, Turano
Material fee, $6 a semester. (Academic year—day and evening.)

SECOND GROUP

125–26 *Drawing and Painting II—Life, Still Life, and Portrait** (6–6) — The Staff
(Academic year—day.)

127–28 *Drawing and Painting III—Life and Portrait** (6–6) — The Staff
(Academic year—day and evening; summer 1963—Art 127 (3)‡.)

131–32 *Ceramics II* (6–6) — Lafean
Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming, mosaic. Practical experience in display. Individual projects in a choice of techniques, and experimentation in the possibilities and limitations of the medium. Oxidation firing, ceramic design, current directions of the studio potter, research in studio procedures and equipments. Material fee, $30 a semester. (Academic year—day and evening; summer 1963—Art 131 (3)‡, Art 132 (3)‡.)

151–52 *Ceramics III* (6–6) — Lafean
Advanced glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Studio teaching techniques and market ing procedures. Material fee, $30 a semester. (Academic year—day and evening.)

157–58 *Graphics* (6–6) — Perlmutter
Relief printing and wood block, with special reference to western and eastern techniques. (Academic year—day.)

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* Art 21–22 is prerequisite to all other studio courses.
† May be repeated for credit with the approval of the Department.
‡ May be taken for 6 semester hours with the approval of the instructor.

159–60 *Anatomy and Techniques* (6–6) — Russo
Special problems in anatomy and drawing and painting of the life model in action. (Academic year—day.)

161–62 *Workshop in Ceramics* (3–3) — Lafean and Staff
Proper use of ceramic equipment, study of ceramic materials, class projects for varying age groups. Material fee, $35. (Summer 1963.)

175–76 *Advanced Design and Composition* (6–6) — Ruddley
Advanced problems in creative design and composition. (Academic year—day and evening; summer 1963—Art 175 (3)*.)

179–80 *Sculpture II*† (6–6) — Warneke, Turano
Portrait-life modeling and composition in clay; plaster and wood carving. Material fee, $6 a semester. (Academic year—day and evening.)

183–84 *Commercial Art II* (6–6) — Taney and Staff
Problems in the production of advertisements, posters, magazines, pamphlets, displays, exhibits, photography, and materials for television. (Academic year—day and evening.)

185–86 *Commercial Art III* (6–6) — Taney and Staff
Advanced problems and techniques in supervision and production of various commercial projects. (Academic year—day and evening.)

189–90 *Sculpture III*† (6–6) — Warneke
Advanced problems in modeling and direct carving. Prerequisite: 18 semester hours of sculpture. Material fee, $6 a semester. (Academic year—day and evening.)

THIRD GROUP

265–66 *Painting IV*† (6–6) — The Staff
(Academic year—day and evening; summer 1963—Art 265 (3)*.)

275 *Painting V*† (6) — The Staff
(Fall and spring—as arranged; summer 1963—Art 275 (3)*.)

279–80 *Sculpture IV*† (6–6) — Warneke, Turano
(Academic year—as arranged.)

281 *Sculpture V*† (6) — Warneke
Material fee, $6. (Fall and spring—as arranged.)

299–300 *Thesis* (3–3) — The Staff
(Academic year—as arranged; summer 1963.)

MUSIC HISTORY AND LITERATURE AND MUSIC THEORY

FIRST GROUP

3–4 *Music Appreciation* (3–3) — Steiner, Harrison
An introduction to the historical sequences of musical style, the elements of music, musical forms, the works of the chief composers, and the media of musical presentation. (Academic year—day and evening; summer 1963—Music 4 (3).)

5–6 *Fundamentals of Music* (3–3) — Harrison
Fundamental principles and practical use of the elements of music, including scales, keys, intervals, triads, chords, cadences, notation, terms, melodic and harmonic dictation and basic harmonic and contrapuntal practice. (Academic year—day.)

* May be taken for 6 semester hours with the approval of the instructor.
† May be repeated for credit with the approval of the Department.

SECOND GROUP

103–4 *History of Music* (3–3) Steiner
The development of music in the Western World from the early Christian Era to the present. (Academic year—day; summer 1963—Music 104 (3).)

106 *Music of the Classic Period* (3) Harrison
Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Fall—day.)

107 *Music of the Romantic Period* (3) Harrison
Study of the styles, backgrounds, and literature from Schubert through the 19th century developments of nationalism, descriptivism, and neo-classicism. (Spring—day.)

109 *Orchestra Literature* (3) Steiner
Survey of the history and styles of orchestra literature; analysis of representative works. (Fall—day.)

110 *Chamber Music Literature* (3) Steiner
Survey of the history and styles of chamber music literature; analysis of representative works. (Spring—day.)

121 *The Opera* (3) Harrison (Fall—day.)
Survey of the history and styles of opera; analysis of representative works.

131–32 *Harmony* (3–3) The Staff
Practice in harmonic writing, figured and unfigured bass, secondary and altered chords, nonharmonic tones and extended modulations. Prerequisite: Music 5–6 or the equivalent. (Academic year—evening.)

135 *Counterpoint* (3) The Staff
Strict counterpoint up to four parts. Techniques of small contrapuntal forms. (Spring—evening.)

137 *Orchestration* (3) The Staff
Instrumental orchestral scoring. (Fall—evening.)

138 *Form and Analysis* (3) Harrison
Analysis of musical forms in representative musical literature. (Spring—day.)

APPLIED MUSIC

FIRST GROUP

All first-group courses in Applied Music may be repeated for credit.

11 *Piano* (1 or 2) Tolson, Ott
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 11 (1).)

13 *Voice* (1 or 2) Zabawa
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 13 (1).)

15 *Organ* (1 or 2) Scribner
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 15 (1).)

17 *Orchestral Instruments* (1 or 2) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged; summer 1963—Music 17 (1).)

51 *Orchestra* (1) Steiner
Preparation and performance of orchestral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

53 *Chorus* (1) Harmon
Preparation and performance of choral literature. Prerequisite: audition before Director. (Fall and spring—evening.)

SECOND GROUP

Before admission to second-group courses in Applied Music the student must demonstrate, in audition, that he meets departmental requirements.

All of the following courses may be repeated for credit: *only music majors*, however, may earn 3 hours of credit in one semester for any of these courses. The studio fee is waived for full-time major students.

111 *Piano* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

113 *Voice* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

115 *Organ* (1 or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

117 *Orchestral Instrument* (1or 3) The Staff
Individual lessons. Studio fee, $40 a semester hour. (Fall and spring—as arranged.)

BIOCHEMISTRY

Professors J. H. Roe *(Emeritus)*, C. R. Treadwell *(Chairman)*
Professorial Lecturers W. R. Carroll, Irving Gray, Arthur Weissbach, Leon Swell
Associate Professors B. W. Smith, G. V. Vahouny, J. M. Bailey

221–22 *General Biochemistry* (4–4) Vahouny
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 152. Material fee, $15 a semester. (Academic year—TTh 8–12 am.)

224 *Biochemistry of the Enzymes* (1) Weissbach
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. (1964–65 and alternate years: spring—M 5 pm.)

225–26 *Biochemical Procedures* (3–3) Smith and Staff
A laboratory course. Material fee, $16 a semester. (Academic year—as arranged.)

227–28 *Biochemistry Seminar* (1–1) The Staff
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. (*First half:* F 5 pm. *Second half:* F 4 pm.)

232 *Proteins and Amino Acids* (1) Carroll
A lecture course. Prerequisite: Biochemistry 113 or 221. (Spring—W 5 pm).

241 *Isotopes* (2) Gray
Theoretical characterization of isotopes and their applications in biology. Attention

will be given to counting, health physics and radiation safety, autoradiography and chromotography. (Spring—S 8 am.)

249–50 *Introduction to Medical Research** (3–3) Bailey
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

251 *Carbohydrate Metabolism* (1) Weissbach
A lecture course. Prerequisite: Biochemistry 114 or 222. (1963–64 and alternate years: spring—M 5 pm.)

261 *Biochemistry of the Lipids* (1) Swell, Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. (Spring—S 12 noon.)

295–96 *Research in Biochemistry* (arr.) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

BOTANY

Professor R. B. Stevens *(Chairman)*
Professorial Lecturer L. B. Smith
Associate Professors J. M. Kaper *(Research)*, Caroline Adams
Associate Professorial Lecturers Kittie Parker, R. S. Sigafoos, Edward Hacskaylo, H. M. Cathey, R. N. Stewart, R. L. Weintraub
Lecturer W. A. Shropshire, Jr.

BIOLOGY†

FIRST GROUP

1–2 *Introductory Biology*‡ (4–4) The Staff
An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences (4):* fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences (4):* fall and spring—day and evening; summer 1963.)

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* This is an interdepartmental course. The student should register in the department directing his research.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

‡ Biology 1–2 is prerequisite to all second-group courses in Botany, except by permission of the instructor.

BOTANY

SECOND GROUP*

105 *Field Botany* (3) — Parker
Lecture (1 hour), laboratory and field (4 hours). A course, primarily for nonspecialists, emphasizing local flora. (1963 and alternate summers.)

106 *Plant Growth* (3) — Shropshire
Lecture (2 hours), laboratory (2 hours). A course, primarily for nonspecialists, emphasizing practical problems of growing and caring for plants. Material fee, $8. (1964 and alternate summers.)

108 *Organic Evolution*† (3) — Munson
Theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: spring—day; 1964–65: spring—evening.)

109–10 *Plant Morphology* (3–3) — Adams
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—day.)

115–16 *Cytology*† (3–3) — Desmond
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

125–26 *Plant Taxonomy* (3–3) — Parker
Lecture (1 hour), laboratory and field (4 hours). (1963–64 and alternate years: academic year—evening.)

127 *Genetics*† (3) — Stewart
A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

131–32 *Mycology* (3–3) — Stevens, Hacskaylo
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1964–65 and alternate years.)

133–34 *Plant Pathology* (3–3) — Stevens
Lecture (2 hours), laboratory (2 hours). Material fee, $8 a semester. (1963–64 and alternate years: academic year—evening.)

135–36 *Plant Physiology* (3–3) — Cathey
Lecture (2 hours), laboratory (2 hours). Prerequisite: Chemistry 11–12 or permission of the instructor. Material fee, $8 a semester. (1964–65 and alternate years.)

140 *Cell Physiology*† (3) — Shropshire
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

141–42 *Plant Ecology* (3–3) — Sigafoos
Lecture (1 hour), laboratory and field (4 hours). (1964–65 and alternate years.)

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* Biology 1–2 is prerequisite to all second-group courses in Botany except by permission of the instructor.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

THIRD GROUP

201–2 *Seminar: Cytology** (3–3) Desmond
A study in the current literature in experimental cytology. (Not offered 1963–64.)

221 *Seminar: Taxonomy* (3) Smith
(1964–65 and alternate years.)

232 *Seminar: Mycology and Plant Pathology* (3) Stevens
(1963–64 and alternate years: spring—as arranged.)

235 *Seminar: Plant Physiology* (3) Cathey, Hacskaylo
(1963–64 and alternate years: fall—as arranged.)

242 *Seminar: Plant Ecology* (3) Sigafoos
(1964–65 and alternate years.)

252 *Seminar: Plant Virology* (2) Kaper
(Spring—as arranged.)

295–96 *Research* (arr.) The Staff
Fee to be arranged. (Academic year—as arranged; summer 1963—Botany 295 (arr.).)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

CHEMISTRY

Professors B. D. Van Evera, S. N. Wrenn, C. R. Naeser *(Chairman)*, R. C. Vincent, W. F. Sager, R. E. Wood, T. P. Perros, W. E. Schmidt, D. G. White, J. W. Harkness
Assistant Professors R. C. Sentz, Margaret Ethier, D. M. Eargle

FIRST GROUP

3–4 *Fundamentals of Physical Sciences* (4–4) Schmidt, Ethier
A year course: credit is not given for the first half until the second half is completed. Lecture (3 hours), laboratory (3 hours). Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester. (Academic year—day.)

11–12 *General Chemistry* (4–4) The Staff
A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

13–14 *General Chemistry* (4–4) White
A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). A terminal course in general chemistry for students in the School of Engineering and Applied Science. Prerequisite: Physics 11 and Mathematics 21 or 29. Laboratory fee, $18 a semester. (Academic year—day and evening.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

15 *General Chemistry (Accelerated)* (4) The Staff
Lecture (3 hours), laboratory (3 hours), recitation (1 hour). An intensive one semester course in general chemistry. Prerequisite: high school chemistry accompanied by laboratory work and a satisfactory grade on either the College Entrance Examination Board Achievement Test in Chemistry or on the placement examination given by the Department of Chemistry prior to registration, and high school physics. Laboratory fee, $13. (Fall—day.)

21 *Qualitative Inorganic Analysis* (4) Vincent
Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12 or 15, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, $18. (Fall—day and evening; spring—day; summer 1963.)

22 *Quantitative Inorganic Analysis I* (4) Schmidt
Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18. (Spring—day and evening; summer 1963.)

SECOND GROUP

111–12 *Physical Chemistry Lectures* (3–3) Wood
A year course: credit is not given for the first half until the second half is completed. Introduction to physical chemistry. Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have adequate credit for physical chemistry laboratory. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 22 or former 30, Physics 13 or 15, or (2) Chemistry 21, Mathematics 22 or former 30, Physics 14. (Academic year—day and evening.)

113–14 *Physical Chemistry Laboratory* (2-2) Wood
A year course: credit is not given for the first half until the second half is completed. Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester. (Academic year—day (also Saturday).)

122 *Quantitative Inorganic Analysis II* (4) Schmidt
Lecture (2 hours), laboratory (6 hours). Continuation of Chemistry 22 including theory and practice of separations, organic reagents, electrochemistry, and colorimetry in analysis. Prerequisite: Chemistry 22. Laboratory fee, $18. (Fall—day and evening.)

131 *Descriptive Inorganic Chemistry* (2) White
An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151. (Spring—day.)

135–36 *Inorganic Chemistry: Preparations* (2–2) Perros
Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152 and 134. Laboratory fee, $18 a semester. (*First half:* Fall—day, spring—evening. *Second half:* spring—evening.)

151–52 *Organic Chemistry* (4–4) Wrenn, Sager
A year course: credit is not given for the first half until the second half is completed. Chemistry of the compounds of carbon. Prerequisite*: Chemistry 21. Laboratory fee: Chemistry 151, $12; Chemistry 152, $20. (*First half:* fall—lecture (3 hours), laboratory (3 hours), day and evening; summer 1963. *Second half:* spring—lecture (2 hours), laboratory (6 hours), day and evening; summer 1963.)

* This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 or 15 within the past two years or by a placement examination.

153 *Special Laboratory in Organic Chemistry* (1) Wrenn, Sager
A course designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 151–52. Prerequisite or concurrent registration: Chemistry 22 and 152. Laboratory fee, $12. (Spring—day and evening.)

155 *Organic Chemistry: Preparations* (2 or 3) Wrenn
Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour. (Spring—evening.)

156 *Qualitative Organic Analysis* (3) Sentz
Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, $18. (Fall—evening.)

191 *History of Chemistry* (2) Perros (1963–64 and alternate years: fall—evening.)
Historical development of chemistry. Prerequisite: Chemistry 22 and 152.

193 *Chemical Literature* (1) Wrenn
A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Fall—evening.)

THIRD GROUP*

203 *Chemical Kinetics* (2) Wood
The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112. (1963–64 and alternate years: spring—evening.)

211–12 *Physical Chemistry* (2–1) Wood
Same course as 111–12. Chemistry 211–12 may be taken for credit only by special permission. Credit will be assigned only upon the satisfactory completion of Chemistry 213. (Academic year—day and evening.)

213 *Chemical Thermodynamics* (3) Wood
Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: grade of *A* or *B* in Chemistry 111–12, *Satisfactory* in 211–12, or qualifying grade in physical chemistry qualifying examination. (Fall—evening.)

216 *Statistical Mechanics as Applied to Chemistry* (3) Sager
An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

217 *Chemical Bonding* (2) Sager
A survey of modern developments in the theory of valence with emphasis on application to problems of stability and structure of complex molecules. Prerequisite: Chemistry 213 or permission of instructor. (1964–65 and alternate years.)

221–22 *Advanced Analytical Chemistry* (2 or 3–2 or 3) Schmidt
Lecture (2 hours), laboratory (3 hours—optional). Theory and application of recent methods of analysis including electrical and optical instrumentation. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a semester without laboratory work, either half may be taken first. Laboratory fee, $11 a semester. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

* The appropriate qualifying examination is prerequisite to all advanced courses.

231–32 *Special Topics in Inorganic Chemistry* (2–2) White, Perros
A series of one-semester courses covering such topics as (1) chemistry of the less familiar elements, (2) organometallic, organosilicon, and carbonyl compounds, and (3) co-ordination chemistry. Prerequisite: Chemistry 235. (Academic year—evening.)

234 *Radiochemistry* (2)
The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235–36. (1964–65 and alternate years.)

235–36 *Inorganic Chemistry* (3–2) Naeser
Application of modern chemical theories to inorganic substances and reactions, followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14. (Academic year—evening.)

251–52 *Advanced Organic Chemistry* (3–3) Sager
Synthesis, reactions, and properties of carbon compounds, fundamental theories of organic chemistry. Prerequisite: Chemistry 152 and qualifying examination. Prerequisite or concurrent registration: Chemistry 111–12, 113–14. (Academic year—evening.)

253 *Advanced Synthetic Organic Chemistry* (3) Wrenn
Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening.)

257 *Theoretical Organic Chemistry* (3) Sager
Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252. (1963–64 and alternate years: fall—evening.)

291–92 *Seminar: Recent Developments in Chemistry* (1–1) The Staff
(Academic year—day.)

295–96 *Research* (arr.) The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
Laboratory fee, $18 a semester. (Academic year—as arranged; summer 1963.)

CLASSICAL LANGUAGES AND LITERATURES

Professor J. F. Latimer *(Chairman)*
Lecturer A. B. Seidman
Associates R. G. Crawford, D. B. Beers

LATIN AND GREEK

FIRST GROUP

1–2 *First-year Latin* (3–3) Crawford
A year course; credit is not given for the first half until the second half is completed. Functional presentation of the essentials of the language, with appropriate reading selections; development of English derivatives; introduction to Roman life and literature. (1963–64 and alternate years: academic year—evening.)

Beers

3–4 *Second-year Latin* (3–3)
A year course: credit is not given for the first half until the second half is completed. A continuation of the first-year course, but with increased emphasis on Latin readings which illustrate Roman life and literature; continuation of vocabulary building in English. Prerequisite: Latin 1–2 or two years of high school Latin. (1963–64 and alternate years: academic year—day.)

The Staff

11–12 *First-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Essentials of grammar with appropriate reading selections. (Offered 1964–65.)

Latimer

13–14 *Second-year Greek* (3–3)
A year course: credit is not given for the first half until the second half is completed. Review of grammar; rapid reading from selected Greek authors. (Academic year—evening.)

The Staff

49–50 *Latin Grammar and Readings* (3–3)
Primarily for graduate students preparing for reading examinations. Undergraduates admitted by permission of the instructor. No academic credit for graduate students. *First half:* essentials of Latin grammar with appropriate reading selections. *Second half:* continuation of grammar with selections from various Latin authors for rapid reading. (Academic year—as arranged.)

The Staff

51–52 *Introduction to Latin Prose and Poetry* (3–3)
Selections from Cicero and Caesar, Virgil and Ovid. Prerequisite: Latin 3–4 or three years of high school Latin. (Not offered 1963–64.)

SECOND GROUP

The Staff

101–2 *Roman Comedy* (3–3)
Selected plays from Plautus and Terence. Prerequisite: Latin 51–52 or permission of the Instructor. (Academic year—evening.)

The Staff

111–12 *Roman History and Philosophy* (3–3)
Selections from Cicero, Sallust, Lucretius, and Livy. Prerequisite: Latin 51–52 or permission of the Instructor. (Not offered 1963–64.)

The Staff

121–22 *Roman Lyric Poetry and Satire* (3–3)
Selections from Catullus, Horace, Juvenal, and Martial. Prerequisite: Latin 101–2 or permission of the Instructor. (Not offered 1963–64.)

COURSES IN ENGLISH TRANSLATION

FIRST GROUP

Latimer

71–72 *Greek and Roman Backgrounds in Literature* (3–3)
Selected Greek and Roman masterpieces and their literary influence. This course satisfies the literature requirement, see footnote, page 67. (*First half:* spring—day. *Second half:* fall—day.)

SECOND GROUP

The Staff

109–10 *Greek and Roman Drama* (3–3)
Selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca; selected comedies of Aristophanes and Menander, Plautus and Terence; historical development of classical drama. (Not offered 1963–64.)

CLASSICAL HEBREW

Seidman

21–22 *First-year Classical Hebrew* (3–3)
A year course: credit is not given for the first half until the second half is completed. Fundamental principles of the language with practice in reading simple narrative prose. (Not offered 1963–64.)

23–24 *Second-year Classical Hebrew* (3–3) Seidman
A year course: credit is not given for the first half until the second half is completed. Review of grammar and exegesis of selected passages from the Hebrew text of the Old Testament. (Academic year—day.)

CHINESE

31–32 *Elementary Chinese (Mandarin)* (3–3) Wang
(Academic year—evening.)

ECONOMICS

Professors A. E. Burns, D. S. Watson, T. W. Holland, J. W. Kendrick, W. E. Schmidt, Sar Levitan *(Research)*, J. W. Skinner *(Chairman)*, C. T. Stewart *(Research)*
Professorial Lecturers S. H. Axilrod, Margaret deVries, R. E. Moor
Associate Professors Henry Solomon *(Research)*, Joseph Asehheim, R. P. Sharkey
Associate Professorial Lecturers R. L. Sammons, D. J. Edwards
Assistant Professors Ching-Yao Hsieh, S. J. Hunter
Lecturers M. E. Fieser, Paul Gekker, S. E. Haber

FIRST GROUP

1–2 *Principles of Economics** (3–3) Skinner and Staff
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—evening; spring—day and evening; summer 1963.)

SECOND GROUP

101–2 *Economic Analysis* (3–3) The Staff
Analysis of demand, supply, and pricing; theory of national income determination. (*First half:* fall—day and evening; spring—evening; summer 1963. *Second half:* fall—day; spring—day and evening.)

104 *History of Economic Thought* (3) Burns
History of the major schools of economic thought; influence of changing problems on the development of economic theory. (Spring—day.)

105 *Business Cycles* (3) Kendrick
Description and analysis of the facts of economic instability, survey of recent business cycle theory, forecasting, and consideration of counter-cyclical policies. (Fall—evening.)

121 *Money and Banking* (3) Hunter
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. (Fall—day and evening; spring—evening; summer 1963.)

* Economics 1-2 is prerequisite to all other courses in Economics.

123 *Monetary Theory and Policy* (3) Hunter
Principal contemporary theories, background of recent monetary policy. (Spring—day.)

133 *The Economy of the Soviet Union* (3)
Development and main features of the economic life of the Soviet Union (See History 145–46 and Geography 196). (Not offered 1963–64.)

141 *Unionism and Collective Bargaining* (3) Holland
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls. (Fall—day.)

142 *Labor Economics* (3) Holland
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Spring—day.)

161–62 *Public Finance and Taxation* (3–3)
General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies. (Academic year—evening.)

165 *Government Control of Economic Activity* (3) Watson
Changing role of government in promoting and regulating economic activity, types and spheres of control. (Fall—day.)

181–82 *International Economics* (3–3) Schmidt
First half: survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries. (Academic year—day and evening; summer 1963—Economics 181 (3).)

185–86 *Economic History and Problems of Latin America* (3–3) Sammons
Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America. (Academic year—evening.)

198 *Proseminar in Economics* (3) Skinner
Comprehensive survey of economics. Prerequisite: Economics 101–2 and 121. (Fall and spring—as arranged.)

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns
Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies. (Academic year—evening.)

203–4 *Contemporary Price Theory* (3–3) Watson
The theory of relative prices from Marshall to the present. (Academic year—evening.)

205 *Theory of Employment and Income* (3) Kendrick
Determinants of the level of employment and income. Keynesian and classical systems contrasted, and recent literature on the subject. (Fall—evening.)

206 *Business Cycle Analysis* (3) Kendrick
Empirical analysis of American business cycles; evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening.)

208 *The National Income* (3) — Kendrick
The theory of economic aggregates; measurement and policy aspects of national income. (Spring—evening.)

210 *Seminar in Economics* (3) — Skinner
Methodology of economics, integration of economic theories, methods of research. Open only to students who have completed fifteen hours of graduate work in economics. (Academic year—evening.)

212 *Seminar in Price Theory* (3) — Watson
Advanced topics in the theory of relative prices. Prerequisite: Economics 203–4 or the equivalent. (Not offered 1963–64.)

213 *Economic Thought in the Twentieth Century* (3) — Burns
Continuation of Economics 201–2. The principal trends in economic thought during the present century. (Not offered 1963–64.)

215–16 *Mathematical Economics* (3–3) — Solomon
Introduction to the uses of mathematics in economic theory. (Academic year—evening.)

217–18 *Survey of Economics* (3–3) — Watson
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy. (Academic year—evening.)

219 *Managerial Economics* (3) — Watson
Analysis of price, production, and inventory policies of business firms. (Summer 1963.)

221–22 *Monetary Theory* (3–3) — Hunter
Contemporary monetary theories. (Academic year—evening.)

223–24 *Monetary Policy and Central Banking* (3–3) — Axilrod
The money system in its relation to national income: monetary policies of the Federal Reserve and other central banking systems. (Academic year—evening.)

231–32 *Quantitative Economics* (3–3) — Solomon
Selected topics in quantitative economics. (Not offered 1963–64.)

241 *Unionism, Collective Bargaining, and Labor Economics* (3) — Holland
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration. (Fall—evening.)

244 *Problems in Unionism, Collective Bargaining, and Labor Economics* (3) — Holland
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics. (Spring—evening.)

246 *Foreign Labor Movements* (3) — Holland
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States. (Spring—evening.)

247 *Labor Relations in the Federal Service* (3) — Holland
Admission by permission of the instructor. (Fall and spring—evening.)

251–52 *Economic Development* (3–3) — Schmidt
Theories and problems of economic growth with special attention to the underdeveloped countries. (Academic year—evening; summer 1963—Economics 251 (3).)

253 *Productivity Analysis* (3) — Kendrick
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. (Fall—evening.)

261–62 *Public Finance and Fiscal Policy* (3–3) — Moor
Special problems in contemporary public finance and fiscal policy. (Academic year—evening.)

263–64 *Theory of Public Finance* (3–3) deVries
Criteria for the allocation of government expenditures, principles of taxation, fiscal policy for stable growth. (Academic year—evening.)

265–66 *Theory of Economic Policy* (3–3) Watson
The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy. (Academic year—evening.)

267 *The Soviet Economy* (3) Gekker
Development of the Soviet-type economy; organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 145–46, 247, and Geography 166.) (Fall—evening.)

281–82 *International Economics* (3–3) Schmidt
First half: the theory of international trade and factor movements. *Second half:* the theory of balance-of-payments adjustment. (Academic year—evening.)

284 *United States Foreign Economic Policy* (3) Schmidt
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. (Not offered 1963–64.)

285–86 *Economic Development of Latin America* (3–3) Sammons
Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Academic year—evening.)

287–88 *Latin America: Trade and Commodity Policy* (3–3)
Tariffs and exchange control systems(bilateral and general commercial agreements, terms of trade. (Not offered 1963–64.) Schmidt

290 *Seminar in International Economics* (3)
Advanced topics in international economics. Prerequisite: Economics 281–82 or the equivalent. (1963–64 and alternate years: spring—evening.) The Staff

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

EDUCATION

Professors J. H. Fox, B. S. Root *(Chairman)*, G. L. Angel, W. T. Carroll, F. N. Hamblin

Professorial Lecturers Madaline Remmlein, Florence Lumsden, H. O. Johnson, Anthony Marinaccio, C. D. Hutchins, J. B. Holden, B. D. Joy, J. P. Walsh, D. D. Darland, K. E. Brown, Kathryn Cook, J. C. Lang, J. F. Rogers, H. M. Wilson

Associate Professors Mary Coleman, W. A. McCauley, Carol St. Cyr, H. G. Detwiler, R. E. Baker, Martha Rashid

Associate Professorial Lecturers LuVerne Walker, Eugenia Nowlin, Beverly Crump, Mary Scott, John Giancaspro, Hazel Wilson, Helen Mitchell, J. L. Cameron, Samuel Kavruck, Zelda Kosh, C. O. McDaniels, J. W. Suber

Assistant Professors R. W. Eller, J. G. Boswell, Margaret McIntyre, D. T. McNelis

Lecturers Ward Whipple, H. L. Cushman, Marcella Bernstein, Joanne Parker, D. W. Hunt, R. J. Kubalak, R. S. Westerlund, W. E. Amos

FIELD STUDIES

Director J. W. Charles, *Assistant Director* M. H. Jessup

FIELD SERVICE COORDINATORS

Alexander Anderson, *Assistant Principal, Washington-Lee High School, Arlington, Va.;* Mary Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.;* C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

A *Reading Clinic* — Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for individual diagnosis, $45; for individual instruction, $6 a lesson; for semi-individual instruction, $5 a lesson; for instruction in small groups with common reading difficulties, $3.75 ($3.25 for students currently registered in the University).

SECOND GROUP

108 *Human Development, Learning, and Teaching* (3) — McIntyre

Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. (Fall and spring—day and evening; summer 1963.)

111 *Methods in Elementary Education* (12) — McIntyre and Staff

For seniors in the elementary school curriculum. Methods, materials, appraisal, and field experiences in elementary schools. Problems and procedures in teaching the language arts (including reading, literature for children, oral and written expression, spelling, and handwriting), arithmetic, science, and social studies. Planning units of work, general classroom procedures, and evaluation of pupil progress. Observation and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—day.)

112 *Educational Measurement* (3) — McCauley

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall—day; spring—evening; summer 1963.)

113 *Elementary School Art* (3) — Nowlin

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, $4.50. (Fall and spring: lecture and laboratory (3 hours)—evening, field work—as arranged; summer 1963 (Crump).)

114 *Elementary School Music* (3) — Mitchell

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963.)

115 *Teaching of Reading in the Elementary School** (3) — Parker

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123 or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963.)

116 *Elementary School Social Studies** (3)

Lecture (2 hours), field work (2 hours). For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Summer 1963.)

* This course may not be taken by students who have completed or who plan to enroll in Education 111.

117 *Elementary School Science** (3) St. Cyr
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963).

120 *Elementary School Arithmetic** (3)
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963 (Baker).)

123 *Society and the School* (3) St. Cyr and Staff
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and sociological development of education at the local, national, and international levels; cooperation of the school with other community agencies; organization and operation of schools; functions of school personnel. (Fall and spring—day and evening; summer 1963.)

128 *Children's Literature** (3) Walker
For teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1963 (McIntyre).)

131 *Principles and Methods of Secondary School Teaching* (3) Boswell, Myers
Lecture (2 hours), field work (2 hours). For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 108 and 123. (Fall and spring—day.)

134 *Student Teaching in Secondary Schools* (6 to 9) Boswell and Staff
For seniors in the secondary school curriculum. Sections A, B, and C are for academic majors. Section D is for physical education majors (Myers, Stallings). Student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (134A: fall and spring—as arranged. 134B, 134C. 134D: spring—as arranged.)

135 *Student Teaching in Elementary Schools* (9) McIntyre
For seniors in the elementary school curriculum. Student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (135A and 135B: spring—as arranged.)

SPECIAL METHODS COURSES†

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

136 *Teaching English* (2 to 4) Lumsden
Prerequisite†: 18 semester hours in English. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

137 *Teaching Speech* (2 to 4) Kosh
Prerequisite†: 18 semester hours in Speech or the permission of the instructor. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

* This course may not be taken by students who have completed or who plan to enroll in Education 111.

† Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

138 *Teaching Social Studies* (2 to 4) Boswell
Prerequisite*: 24 semester hours of social studies. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

140 *Teaching Mathematics* (2 to 4) Brown
Prerequisite*: Mathematics through calculus. (Spring—evening.)

144 *Teaching Science* (2 to 4) Eller
Prerequisite*: 24 to 40 semester hours of science. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.)

146 *Teaching Foreign Languages* (2 to 4) McSpadden
Prerequisite*: 18 semester hours of one foreign language. (Spring—day.)

148 *Teaching Home Economics* (2 to 4) Towne
Prerequisite*: 30 semester hours of Home Economics. (Spring—as arranged.)

150 *Teaching Business Subjects* (2 to 4) Shott
Prerequisite*: 30 semester hours of business education. (Spring—Saturday morning.)

THIRD GROUP†

203–4 *Comparative Education* (3–3)
Comparison of foreign educational systems with those of the United States, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—evening.)

205–6 *The Curriculum*‡ (3–3) St. Cyr
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. (Academic year—Saturday morning; summer 1963—Education 205 (3).)

207 *Curriculum Materials*‡ (3) St. Cyr
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. (Fall—evening.)

208 *Human Development, Learning, and Teaching* (3) Lang
Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring—evening.)

209 *Child Growth and Development* (3) Rashid
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school. (Fall—evening.)

210 *Adolescent Growth and Development* (3) Rashid
A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships. (Spring—evening.)

212 *Educational Measurement* (3) McCauley
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments. (Fall—evening.)

* Prerequisite to all special methods courses Education 108, 123, and 131. Additional prerequisites may be named under each course.
† A degree from an accredited institution is prerequisite to all third-group courses.
‡ Prerequisite: adequate professional preparation.

261–62 *Practicum in Guidance* (3–3) Detwiler
Supervised practical instruction in school guidance. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged.)

263–64 *Employee Training* (3–3) Walsh, Root
First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training. (Academic year—evening.)

265–66 *Teaching Secondary School English—Materials, Resources, Content* (3–3) Lumsden
A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature. (Academic year—evening.)

267–68 *Teaching Secondary School Social Studies—Materials, Resources, Content* (3–3) Whipple
A refresher course for teachers of the Social Studies. Discussion of new approaches to course content. Offered in cooperation with the departments of History, Political Science, Geography and Regional Science, Economics, and Sociology and Anthropology. (Not offered 1963–64.)

269–70 *Business Management of Schools I–II* (3–3) Carroll
First half: philosophy, responsibilities, and function of the business management office in public education institutions; responsibilities of boards of education, superintendents, and central office staffs. *Second half:* planning and financing; building utilization, operation, and maintenance; transportation; lunchrooms; purchasing, storing, and distribution; accounting and budgetary procedures; depreciation, insurance, and bond issues. (Not offered 1963–64.)

271 *The Teacher and School Administration** (3) Suber, Carroll, Fox
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. (Fall—Saturday morning; spring—evening; summer 1963.)

272 *The Teacher and School Supervision** (3) Carroll, Fox
Nature, organization, human relationships, and techniques. (Fall—evening; spring—Saturday morning; summer 1963.)

273–74 *Teacher Education** (3–3) Darland
First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching field preparation, professional sequences, laboratory experiences. (Academic year—evening.)

275 *School Finance** (3) Carroll
Educational financial theory, practice, and control, including methods of financing. (Spring—evening.)

276 *Seminar: Public Relations in School Administration** (3) Carroll
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Fall—evening.)

277 *Administration of School Personnel** (3) Carroll
Techniques and problems of administration related to more effective service of staff personnel. (Spring—evening; summer 1963.)

* Prerequisite: adequate professional preparation.

278 *School Law** (3) Remmlein
Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Not offered 1963–64.)

279–80 *Adult Education** (3–3) Detwiler, Holden
First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—evening; summer 1963—Education 279 (3).)

283–84 *Higher Education** (3–3) Rogers
First half: development, present status, and outlook for American colleges; purposes of higher education, current and projected programs; trends in curriculum, instruction, administration, and evaluation of outcomes. *Second half:* principles in development of college programs; study of curricula in liberal arts and professional fields; relationship of institutional services and facilities to the instructional program. (Not offered 1963–64.)

285 *Extra-classroom Activities** (3)
Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. (Not offered 1963–64.)

287–88 *Clinical Study of Reading Problems** (3–3) Coleman
For advanced students. Diagnostic and corrective work under supervision of the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223–24 or the equivalent. Material fee, $5 a semester. (Academic year—evening.)

289 *Supervisory Problems in Reading** (3) Coleman
For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered 1963–64.)

291 *Planning the School Plant* (3) Cameron
Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Not offered 1963–64.)

293–94 *Research* (3–3) The Staff
Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor. (Academic year—as arranged.)

295 *Educational Research Methods and Procedures* (3) McCauley
Required of all candidates for graduate degrees in Education. To be taken early in the student's graduate program. Prerequisite: an elementary course in statistics. (Fall and spring—evening; summer 1963.)

296 *Seminar in Educational Research* (3) McCauley
Designed to help students analyze scientific approaches to problems in education; evaluate the application of research techniques to typical problems; define, organize, and conduct research studies; and prepare proposals for sponsored research. Required of all candidates for the Doctor of Education degree and open, with permission, to candidates for other advanced degrees. Prerequisite: Education 295 or the equivalent. (Spring—evening.)

297 *Reading in Education* The Staff
To assist those preparing for the comprehensive examinations. No credit toward degree requirements. Tuition fee, $36. (Fall and spring—late afternoon; summer 1963.)

* Open only to students who have had adequate professional preparation.

299–300 *Thesis* (3–3) The Staff
Required of all Master of Arts candidates writing Master's theses. (Academic year—as arranged.)

SPECIAL PROGRAM IN ELEMENTARY TEACHER EDUCATION

The following courses are open only to students in the Special Program in Elementary Teacher Education.

107 *Foundations for Elementary School Teaching* (9) Baker, Rashid, and Staff
A block course, dealing with the history of education, the psychological foundations of elementary education, the nature of elementary education, and the elementary school in our society. The content of traditional courses, in educational psychology; history of education; human development, learning, and teaching; society and the school; and introduction to elementary education will be covered. One hundred and thirty-five class hours, supplemented by field experiences. (Summer 1963.)

119 *Elementary School Curriculum* (12) Rashid and Staff
A block course, identifying the essential experiences for the education of elementary school children and working toward initial competence in the methods and materials for providing such experiences. The subject areas of reading, children's literature, communication arts, arithmetic, science, social studies, art, music, and physical education are included. One hundred and eighty class hours, supplemented by appropriate observations and field experiences. (Fall—day.)

230 *Seminar for Interns in Elementary School Teaching* (3) Rashid and Staff
Scheduled weekly meetings for discussion of common problems and for cooperatively planned work on areas of individual and group needs. (Spring—day.)

ENGINEERING AND APPLIED SCIENCE

Professors C. H. Walther*, M. A. Mason, R. A. Hechtman, P. A. Crafton, Louis de Pian, N. T. Grisamore, H. E. Smith, Robert Heller, M. S. Ojalvo, G. M. Arkilic

Adjunct Professors L. A. Guildner, A. G. McNish, Gunther Sorger, Churchill Eisenhart, Theodore Young, F. K. Harris

Professorial Lecturers Laurence Heilprin, Ezra Glaser, William Dorfman, Saul Gass, Harold Gold

Associate Professors John Kaye, A. C. Murdaugh, R. R. Fox, R. E. Cronin

Associate Professorial Lecturer Chester Peterson

Assistant Professors E. H. Braun, John Eftis, R. M. Moore, A. C. Meltzer

Lecturers George Abraham, P. H. Sawitz, L. S. Rotolo, J. A. Cunningham, Howard Eisner, Milton Gussow, D. C. Rohlfs, T. B. Wiggins

Instructors T. P. Carroll, D. K. Anand

* On sabbatical leave spring semester 1963–64.

APPLIED SCIENCE

UNDERGRADUATE

3 *Graphical Communication* (3)
Principles and methods of graphical communication, sketching, schematic diagrams, nomographs, charts and graphs, elements of descriptive geometry, spatial representation.

4 *Logic and Method in Analysis* (3)
Logic, methods of investigation and reasoning, hypothesis, inference, probability, analysis in the physical sciences and engineering.

5–6 *Finite Mathematics and Statistics in Science I–II* (3–3)
Statements, sets and functions, numbers systems, probability theory, linear algebra, convex sets, finite chains, basic statistical principles and methods, applications.

10 *General Field Theory* (3)
General theory of fields, Laplace and Maxwell equations, conformal mapping, particle motion in fields, potential.

11 *General Wave Theory* (3)
Basic wave mechanics; wave equations.

12 *Electromagnetic Wave Theory* (3)
Electromagnetic waves in bounded media, radiation, resonators, guides, microwaves.

29–30 *General Network Theory I–II* (3–3)
Network theorems and functions, Laplace transform, Fourier integral, linear and nonlinear circuits, stability, matrices, domains.

32 *Network Analysis* (3)
Solutions of equations using transformation calculus, poles and zeroes of network functions, correlation of domains, matrix representation, nonlinear circuit analysis.

50 *Information Theory* (3)
Basic concepts of information, sources, processes, errors, coding, transmission, capacity, noise.

55 *Control Theory* (3)
Theory of automatic control systems, steady-state and transient analysis, transfer functions, stability criteria.

58 *Analysis Methods* (3)
Methods for analyzing problems; use of fundamental principles of mathematics, science, and engineering in problem analysis.

59–60 *Introductory Analytical Mechanics I–II* (5–5)
Introduction to vector mechanics; statics and dynamics of particles, solids, and fluids; kinematics; behavior of solids and fluids acted upon by forces; Newton's Laws; concepts of stress and strain, with applications.

62 *Soil Mechanics* (3)
Soil mechanics theory, lateral pressure, seepage, failure, slope stability, bearing capacity, behavior under loading.

63 *Fluid Dynamics* (3)
Theory of compressible and incompressible fluid motion; concepts of potential, circulation and vorticity, lift and drag; shock.

64 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow, flow around immersed bodies, airfoil theory, shock wave theory, thermodynamics.

65–66 *System Dynamics I–II* (3–3)
Dynamics of linear systems, analogies, transient and steady-state analysis, Lagrange's equations, Hamilton's principle, introduction to gyrodynamics.

67 *Analytical Kinematics* (3)
Theoretical study of the motion of constrained and unconstrained rigid bodies.

68 *Deformable Body Mechanics* (3)
Analysis of stress and strain, introduction to theory of elasticity, introduction to theory of perfectly plastic solids.

70 *Earth Science* (3)
Formation of and properties of soils and rock, climatology, hydrology, ground water and river flow, seismology.

75 *Digital Circuitry and Systems* (3)
Basic concepts of digital programmed systems, mathematical foundations and techniques for logical design, computer logic and circuitry.

80 *Introductory Astronomy* (3)
Coordinate systems and nomenclature, description of astronomic systems, stars, stellar physics, elementary celestial mechanics.

85 *Thermodynamics* (3)
Theoretical study of fundamental concepts, first and second laws, equations of state, entropy, phase mixtures.

86 *Energy Conversion* (3)
Energy forms and states, energy fields, concepts of efficiency, conversion methods, limitations.

87 *Heat Transfer Theory* (3)
Theoretical concepts of conduction, convection, radiation; field and potential theory applied to conduction.

99 *Intermediate Comprehensive Evaluation Examination* (0)
Required of all students at the completion of the Introductory Level and prior to admission to the Intermediate Level. No academic credit; no fee.

101–2 *Materials Science I–II* (4–4)
Relations of materials structure to its properties, quantum and solid state concepts, crystal and lattice structures, plastics, cermets, elements of physical metallurgy, control of material properties and behavior.

105–6 *Fundamentals of Measurement Science I–II* (4–4)
Standards; measurements; error, accuracy, and precision; design of experiments.

107 *Statistics in Metrology* (3)
Qualitative and quantitative aspects of measurement, statistical methods, uncertainty and accuracy, corrections, sampling.

110 *Management Analysis* (3)
Principles of schematic, conceptual, and mathematical models; mathematical programming; operations analysis.

111 *Operations Research* (3)
Characteristics and capabilities of operations research, role in decision making, methods and techniques.

112 *Quantitative Techniques* (3)
Theoretical study of mathematical, statistical, and quantitative techniques for management.

121–22 *Structural Theory I–II* (4–4)
Theory and analysis of behavior of structures, model analysis, numerical methods, matrix algebra methods, collapse methods.

130 *Electrical Energy Conversion* (3)
Generalized machine theory, thermionics, thermoelectricity, fuel cells' photovoltaic principles, introduction to electromechanical components, elements of magnetohydrodynamics.

198 ***Undergraduate Research*** **(1 to 3)**
Research problems approved by the Faculty (credit is assigned in relation to work undertaken).

199 ***Advanced Comprehensive Evaluation Examination*** **(0)**
Required of all students at the completion of the Intermediate Level and prior to admission to the Advanced Level. No academic credit; no fee.

GRADUATE

201 *Automatic Control* (3)
Advanced theory of automatic control. Systems analysis, multiple loop systems, nonlinear systems.

211 *Mathematical Methods in Applied Science I* (3)
A course in such topics as functions of complex variables, infinite series, linear vector spaces and matrices, and partial differential equations.

212 *Mathematical Methods in Applied Science II* (3)
Mathematical topics include: introduction to tensor analysis, calculus of variations, finite differences, and integral equations.

216 *Advanced Dynamics* (3)
Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyrodynamics; operational methods. Prerequisite: permission of the instructor.

217 *Analytical Mechanics* (3)
Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems. Hamilton's equations, theory of small oscillations.

218 *Mechanics of Orbits and Trajectories* (3)
Celestial mechanics. Orbits and trajectories in force fields. Dynamics of space vehicles.

219 *Mechanics of Continua* (3)
Mechanics of elastic, plastic, and viscous solids, and of fluids; introduction to theory and formulation of basic equations.

220 *Nonlinear Mechanics* (3)
Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.

221 *Theory of Elasticity I* (3)
Introduction to mathematical theory of elasticity, analysis of strain and stress, generalized Hooke's law, equilibrium equations. Beltrami-Mitchell equations, strain energy functions, torsion, general flexure.

222 *Theory of Elasticity II* (3)
First and second boundary-value problems in plane elasticity, uniqueness of solutions, simply and multiply connected regions, three-dimensional problems, thermoelasticity, vibration of elastic solids, variational methods.

223 *Celestial Mechanics* (3)
General equations of motion, Lagrange's planetary equations, disturbing function. Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation.

227 *Experimental Stress Analysis* (3)
Applications of the theory of elasticity in the analysis of strain and stress; theory of gaging for static and dynamic strain and stress measurements.

230 *Dynamics of Compressible Fluids* (3)
Mathematical theory of compressible fluid flow and thermodynamics of compressible fluids.

231 ***Fluid Dynamics*** (3)
Theory of compressible and incompressible fluid motion including potential motion, circulation, and vorticity; mathematical treatment of flow at sub-, trans- and supersonic velocities; normal and oblique shock; and elements of heat transfer.

233 ***Problems in Applied Science*** (3)
Investigation of problems in engineering and applied science, emphasizing imaginative and systematic application of fundamental principles in engineering, physics, and mathematics.

241 ***Science of Materials*** (3)
Relation of the atomic and microscopic structure of materials to their physical and mechanical properties and their mechanical behavior in applications.

242 ***Magnetohydrodynamics*** (3)
Study of the interaction of electromagnetic and fluid fields. Dynamics of conducting fluids in electromagnetic and magnetic fields.

250 ***Theory of Structures I*** (3)
Classical and modern methods of structural analysis; basic theory of plane structures; statically indeterminate structures, including continuous beams and trusses and arches; limitload analysis; special problems.

251 ***Theory of Structures II*** (3)
Statically indeterminate structural theory, including single and multi-span rigid frames and arches, deflection theory for arches and suspension bridges, thermal stress, and failure of structures.

252 ***Theory of Structural Dynamics*** (3)
Analysis of elastic structures under various dynamic loadings, both steady-state and transient, including vibrations of rigid frames, plates, and thin shells.

260 ***Theory of Plates and Shells*** (3)
Classical and modern theories of plates and shells, plates and cylindrical shells under different loadings and boundary conditions, equations for plates including shear, rotationally symmetric shells under small deformations, and their applications.

261 ***Plasticity of Solids*** (3)
Plastic flow and fracture of solids; theory of elastic perfectly plastic solids, including basic concepts, limit analysis of beams, rigid frames, and plane stress problems; theory of fracture.

262 ***Theory of Elastic Stability*** (3)
Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, arches, plates, stiffened plates, and shells; inelastic buckling.

263 ***Field Analysis and Potential Theory*** (3)
Fields of force, divergence, Newtonian potentials at points of free space, solutions of Laplace's equations, harmonic functions, logarithmic potential.

264 ***Electrodynamics*** (3)
Presence of moving matter in electromagnetic fields, force and energy in moving systems, relativistic concepts, tensors.

265 ***Electromagnetic Waves*** (3)
Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators, and microwave devices.

266 ***Electromagnetic Wave Propagation*** (3)
Ground waves; space-wave propagation, atmospheric effects, ionosphere; maximum usable frequency; bandwidth.

270 ***General Network Analysis*** (3)
Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeroes of network functions, correlation of time and frequency domains, elements of network synthesis.

271 ***Advanced Network Analysis*** (3)
Advanced theory of lumped and distributed linear networks, matrices, stability, activity.

272 ***Active Network Theory*** (3)
Analysis of two-port networks; matrix representation of linear active networks; vacuum-tube and semi-conductor circuit theory; concepts of feedback, stability, and oscillators. Nonlinear circuit analysis, modulation, detection, communication systems.

273 ***Network Synthesis*** (3)
Basic techniques in the synthesis of linear two- and three-terminal passive networks; positive real functions; Foster, Cauer, Brune, Bott-Duffin, Darlington procedures; elements of active network synthesis.

274 ***Analysis of Modulation and Noise*** (3)
Analysis of Fourier series and integrals of signals and linear networks, modulation and spectra, noise analysis including probability method of determining power spectra.

275 ***Physical Electronics*** (3)
Physical principles underlying operation of various electronic devices including vacuum tubes, electron lenses, transistors, and recent solid-state electronic devices.

280 ***Thermodynamics*** (3)
Reversible and irreversible processes, equilibrium, ideal and van der Waal's gases, dilute solutions, phase equilibria, electric and magnetic effects, radiation. Introduction to kinetic theory and statistical mechanics.

281 ***Heat Transfer*** (3)
Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan-Boltzmann and Planck laws for radiation, Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.

282 ***Gas Dynamics*** (3)
Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

283 ***Hypersonic Fluid Dynamics*** (3)
Small disturbance theory, Newtonian theory, constant-density solutions, thin shock layers, viscous interactions, free molecule and rarefied gas flows.

284 ***Combustion Processes*** (3)
Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes.

285 ***Reaction Kinetics*** (3)
Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems.

286 ***Information Theory*** (3)
Discrete and continuous systems; ergodic ensembles and random processes; correlations, filtering, prediction; redundancy.

287 ***Automata and Self-organizing Systems*** (3)
Effectively computable functions and Turing machines, digital computational methods in Boolean algebra, combinational circuits and their analysis, recursion circuits and their analysis, reliability of automata, networks of automata, artificial intelligence.

298 ***Research*** (1 to 3)
Research as arranged.

299–300 ***Thesis*** (3–3)

ENGINEERING

UNDERGRADUATE

1 *Engineering Planning and Economics* (3)
Analysis, planning, and economics of engineering projects using mathematical and modern computational methods.

2 *Regional and Urban Planning* (3)
Engineering aspects of regional and urban planning: including transportation, water supply and sewerage, public safety and convenience, utilities, and natural resources.

10 *Hydraulic Engineering* (3)
Hydraulic system design; including pipe networks, river and channel flow; drainage and irrigation, water supply, and sewerage.

11–12 *Design of Structures I–II* (3–3)
Analysis and design of structures under static and dynamic loading, including wood, metal, and concrete structures; plastic design; ultimate strength design.

13–14 *Structural Design Laboratory I–II* (3–3)
Analysis and design of solutions to structural problems.

15 *Structural Dynamics* (3)
Analysis and design of structures under vibration, earthquake, blast, and other dynamic loading; energy methods; applications of matrix algebra.

19–20 *Engineering Electronics I–II* (3–3)
Analysis and design of: vacuum tube and solid state devices; voltage and power amplifiers; feedback amplifiers; oscillators; equivalent, relaxation, and computing circuits.

22 *Digital Techniques* (3)
Automatic programming techniques, self-detecting and correcting codes, logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams.

23–24 *Computer Laboratory I–II* (3–3)
Use of digital and analog computers; including design, logical circuitry, programming, operation, maintenance, and troubleshooting.

30 *Applied Thermodynamics* (3)
Vapor cycles, combustion, gas dynamics, equilibrium, multiphase mixtures.

31–32 *Thermal Power I–II* (3–3)
Analysis and design of systems and components in heat-power, gas and vapor turbine, internal combustion engine, heat pump, and nuclear power systems.

35 *Fluid Machinery* (3)
Theory and design of dynamic machines; including turbomachinery, torque converters and couplings, and jet machines.

49–50 *Precise Electrical Measurements I–II* (3–3)
Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power, resistance, capacitance, inductance, energy, phase angle, frequency and time; dielectric and magnetic measurements; topics in high-frequency measurement including field strength, signal-to-noise ratio, impedance, attenuation.

52 *Introductory Transducers and Instrumentation* (3)
Theory, design, and application of simple transducers; design of instrumentation of one type systems; analysis and design of simple transducer instrumentation.

53 *Advanced Transducers and Instrumentation* (3)
Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types.

54 *Precise Mechanical Measurements* (4)
Techniques for precise measurement of mass, time, weight, density, force, pressure, vibration, acceleration, flow, and viscosity.

55 *Precise Heat Measurements* (4)
Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure, thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters.

101–2 *Communications Laboratory I–II* (3–3)
Analysis and design of solutions to problems in communications and information.

103–4 *Control Laboratory I–II* (3–3)
Analysis and design of electrical, mechanical, pneumatic, hydraulic, and combined control systems.

105–6 *Electrical Engineering Laboratory I–II* (3–3)
Design projects involving electrical and electromechanical devices and systems.

107–8 *Electronics Laboratory I–II* (3–3)
Design projects involving electronic devices and instrumentation.

109–10 *Energy Conversion Laboratory I–II* (3–3)
Analysis and design of solutions to problems in converting energy states and forms.

111–12 *Mechanical Engineering Laboratory I–II* (3–3)
Design projects involving mechanical, thermal, thermomechanical, and electromechanical devices.

199 *Engineering Research* (1 to 3)
Undergraduate research projects as approved by the Faculty. (Credit is assigned in relation to the work undertaken.)

GRADUATE

201 *Metal Structures* (3)
Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design.

202 *Ultimate Strength of Reinforced Concrete Structures* (3)
Modes of failure of reinforced concrete structures; experimental data on failure; ultimate strength concepts for the analysis of beams, slabs, and columns.

203 *Prestressed Concrete Structures* (3)
Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members.

204 *Geotechnics in Soil Mechanics* (3)
Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement; flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action.

205 *Theoretical Soil Mechanics* (3)
Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics.

206 *Foundation Engineering* (3)
Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling and water front structures.

210 *Space Structures* (3)
Theory of structures in three dimensions; trusses, rigid frames, and thin-shell structures.

211 *Experimental Structural Analysis* (3)
Experimental analysis of truss, rigid frame, plate, and shell structures; large- and small-deflection models; similitude.

212 *Concepts of Structural Design* (3)
Mechanical behavior and failure of structures as determined by properties of materials, nature of structure, and type of loading; selection of type of structure; structural analysis, its applications and possible simplifications.

220 *High-frequency Electronics* (3)
High frequency operation of electron tubes and semiconductor devices, transit time, bunching, pulse techniques.

221 *Industrial Electronics* (3)
Gaseous tubes and applications; rectifiers; timing circuits; induction and dielectric heating; regulation and control, magnetic amplifiers.

222 *Electronic Measurements in Medicine* (3)
Theory of measurements in biological areas, field and circuit theory as a foundation for measurements, techniques for electronic measurements on biological specimens, problems in medicine and psychology with emphasis on measurements and measuring devices.

223 *Physical Basis for Medical Electronics* (3)
Electrical and acoustical properties of biological material; structural components of biological material as they affect its dielectric and acoustical behavior, electrical relaxation phenomena in general and their application to biological material in particular, applications in diathermy and electrocardiography, impedance determination.

230 *Digital Techniques* (3)
Automatic programming techniques, self-detecting and correcting codes, advanced logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams.

231 *Digital Circuitry and Systems* (3)
Introduction to basic concepts of modern digital programmed systems, mathematical foundations and techniques for logical design of digital circuits, electronic design of computer circuits.

232 *Digital Systems* (3)
The programmed system; system design of digital computers, special-purpose digital computers, reliability, data-processing techniques, analog-to-digital and digital-to-analog techniques.

233 *Microwaves* (3)
Transmission lines; waveguides; antennas; resonators; amplifiers and oscillators; klystrons, magnetrons, traveling wave tubes.

234 *Antennas* (3)
Maxwell's equations, radiation, impedance, directional characteristics, arrays, aperture antennas.

235 *Communication Systems* (3)
Radar, television; ultrahigh frequency systems; navigational aids.

240 *Power Transmission* (3)
Transmission lines, exact and approximate equivalent circuits, standing waves, filtering, protection, radio interference, high voltage, line configurations.

241 *Power Generation* (3)
Steam, hydroelectric, and nuclear plants; fuel cells; magnetohydrodynamics; efficiency; reheat cycles; stability; load factors; generator swings.

242 *Power Systems* (3)
Substations, transformers, distribution networks, short and open circuit analysis, symmetrical components, stability, network analyzers.

270 *Advanced General Metrology* (3)

271–72 *Probability and Statistics of Metrology I–II* (3–3)
Probability distributions, discrete and continuous distributions; sampling; combinational analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analysis of experiments, Latin Square experiments, factorial experiments, block and lattice design.

273 *Microwave Measurements* (3)
Measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies. Characteristics and Q of resonant devices.

274 *Precise Optical Measurements* (3)
Optical constants of lens systems; aberration; resolving power; illumination in focal plane; image evaluation, magnification, index of refraction; color and color temperature.

298 *Research* (1 to 3)
Research as arranged.

299–300 *Thesis* (3–3)

ENGINEERING ADMINISTRATION

GRADUATE

201 *Engineering Administration I* (3)
The application of scientific method to the (1) planning element and (2) organizing of the administrative process. Characteristics of plans, establishing objectives and goals, determining policies and procedures, preparing plans to meet stated objectives and goals, organization for planning, testing of plans. Characteristics of organization, patterns of departmentation authority, responsibility, levels of specialization, coordination, decentralization, work division, staff, committees. Introduction to analysis for decision making.

202 *Engineering Administration II* (3)
Sequential to Engineering Administration I. The application of scientific method to the (3) directing or managing element and (4) control element of the administrative process. Personnel management, organized labor, executive leadership, communication, implications of automation, systems analysis for effective administration. Methods of evaluation and control of operations, e.g., financial analysis, budgeting, administrative audits.

204 *Administration of Engineering Contracts* (3)
Study of types of contracts, proposal preparation, evaluating contracts, negotiation, contract extension policies and procedures, appraisal of capabilities of contractors.

207 *Personnel Administration* (3)
Study of personnel functions with emphasis on relationships within organizations which utilize the services of engineers and scientists: employment, health, safety, education and training, financial compensation, union relations, collateral benefits and services, human relations and personnel research practices in engineering and industry.

210 *Engineering Law* (3)
Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, anti-trust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and development contracts.

253 *Management of Production Processes and Facilities* (3)
Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs.

254 *Principles and Procedures of Automatic Data Processing Systems* (3)
Logic of computers, arithmetic and control units, computers as systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes.

255 *Administration of Research and Development* (3)
Contemporary practices of administrators of scientific and engineering research and development for the purpose of finding uniformities, characteristics, and conceptual schemes; relation of such findings to accepted managerial concepts, and projection of their implications on contemporary managerial hierarchies and organizational structures.

261 *Economic Analysis in Engineering Planning* (3)
Important concepts and theories employed in economic analysis of engineering projects. Application of tools and techniques used in various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field.

263 *Quantitative Techniques of Engineering Administration* (3)
Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

271 *Operations Research* (3)
Background and application of operations research; history, characteristics, capabilities, administrative considerations, methods and techniques, including construction of conceptual and mathematical models.

272 *Problems in Operations Research* (3)
Field experience in operations research on a team basis. Each small group locates an actual problem and formulates and solves it by operations research models. Class evaluation of progress.

275 *Linear Programming* (3)
The basic computational, theoretical, and applied areas with emphasis on the general linear programming problem; simplex computational procedure; duality; transportation and assignment problems; production scheduling problem; zero-sum two-person games; applications and recent developments.

276 *Theory of Games* (3)
Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, mixed strategies, minimax concept, connections with linear programming and decision functions, two-person and n-person zero and nonzero sum games.

277 *Queuing Theory* (3)
Study and analysis of operational systems with variables in arrivals and service, Monte Carlo analysis, optimization methods.

285 *Seminar in Administrative Problems* (3)
Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: admission to candidacy and completion of at least 18 semester hours of graduate study.

298 *Research in Engineering Administration* (arr.)
Application of established principles to new engineering administrative situations; the development of new knowledge of administration. Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

299–300 *Thesis* (3–3)

ENGLISH

Professors E. S. Shepard, F. S. Tupper, C. D. Linton*, C. W. Cole, R. H. Moore, J. H. Coberly, P. H. Highfill, Jr., J. G. Allee, Jr., J. P. Reesing, Jr. *(Chairman)*, R. H. Walker, Jr.

Associate Professors W. L. Turner, Muriel McClanahan*, R. E. Gajdusek†, Elizabeth Wright

Assistant Professors M. E. Lyon, R. C. Rutledge, Louise Clubb, R. R. Columbus

Lecturer J. J. Monroe

Instructors Dorothy Clark, L. E. Dodd, Arlyn Edelman, G. C. Landon, Frank Turaj

Associates J. S. Toomey, Eileen Allen, Karen Holum, K. T. Simendinger, V. C. Trofi

ENGLISH COMPOSITION‡

FIRST GROUP

A *English for Foreign Students* (3) — Wright and Staff

A course in reading and writing designed to assist the foreign student in overcoming deficiencies in the use of English. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—day and evening; summer 1963.)

B *English for Foreign Students* (3) — Wright and Staff

For second-semester foreign students not yet ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and styles. (Fall—evening; spring—day and evening.)

1 *English Composition*‡ (3) — Moore and Staff

Review of grammar, exercises in composition, readings. (Fall and spring—day and evening; summer 1963.)

1X *English Composition*‡ (3) — Moore and Staff

An intensive course in English grammar and composition to which are assigned students whose placement tests show them inadequately prepared for the regular work of English 1. The course begins with detailed instruction, drill, and exercises in the basic structure of the English language and in the writing of paragraphs; it continues with the content of English 1. English 1X meets five hours a week and carries 3 semester hours of credit. The tuition fee is $133 (the regular fee of $36 a semester hour, plus an additional fee of $25). (Fall and spring—day and evening; summer 1963.)

2 *English Composition*‡ (3) — Moore and Staff

For second-semester freshmen not following the Columbian College of Arts and Sciences sequence. Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X. (Fall and spring—day and evening; summer 1963.)

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* On sabbatical leave spring semester 1963–64.

† On leave of absence fall semester 1963–64.

‡ Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared are assigned to English 1X.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 1 or 1X is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students *not* required to follow the Columbian College of Arts and Sciences sequence.

4 *English Composition** (3) Moore and Staff
The second half of the six-hour English Composition course required of students in Columbian College. A course in critical analysis and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1963.)

11 *The Writing of Reports* (3) Turner and Staff
Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X, and 2 or 4. (Fall and spring—day and evening.)

SECOND GROUP

109 *Expository Writing* (3) McClanahan
A study of types of expository writing with weekly exercises. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—evening.)

113 *Narrative Writing* (3)
Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1 or 1X, and 2 or 4. (Fall—day and evening.)

114 *The Writing of Fiction—the Short Story* (3) Gajdusek
Prerequisite: English 113; consent of instructor. (Spring—evening.)

117–18 *The Writing of Fiction—the Novel* (3–3) Gajdusek
Writing a novel. Prerequisite: English 114; consent of instructor. (Academic year—evening.)

ENGLISH LITERATURE

FIRST GROUP

51–52 *Introduction to English Literature*† (3–3) Tupper and Staff
A historical survey. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

91–92 *Introduction to European Literature*† (3–3) Shepard and Staff
Consideration of various types. Prerequisite: English 1 or 1X. (Academic year—day and evening.)

SECOND GROUP† Allee

121–22 *English Literature from the Beginnings to 1500* (3–3) (*First half:*
First half: English literature prior to Chaucer. *Second half:* Chaucer. Allee
not offered 1963–64. *Second half:* spring—evening.)

125 *Introduction to English Linguistics* (3) Tupper
The development of the English language in a historical treatment of English grammar. (Fall—evening.)

129–30 *Elizabethan Nondramatic Literature* (3–3)
Nondramatic literature from 1485 to 1601. (Not offered 1963–64.)

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* See (‡) footnote on page 67.

† All students enrolled in curricula leading to Bachelor's degrees in Columbian College, who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 125

135–36 *Shakespeare* (3–3) — Tupper
(Academic year—evening; summer 1963—English 135 (3).)

139–40 *The 17th Century* (3–3) — Reesing
First half: poetry and prose from 1603 to 1660. *Second half:* Milton. (Academic year—day; summer 1963—English 139 (3).)

141–42 *The Neoclassical Movement* (3–3) — Highfill
Poetry and prose from 1660 through the mid-18th century. (Not offered 1963–64.)

151–52 *The Romantic Movement* (3–3) — Reesing
From the mid-18th century through Shelley and Keats. (Academic year—day.)

161–62 *Victorian Literature* (3–3) — Shepard
Poetry and prose from 1830 to 1900. (Academic year—day.)

165–66 *The 20th Century* (3–3) — Linton
British poetry, prose, and drama since 1900. (*First half:* fall—day. *Second half:* not offered 1963–64.)

181–82 *The English Novel* (3–3) — Clubb
Major English novelists from the 18th century to the present day. (Academic year—evening.)

183–84 *The English Drama* (3–3) — Highfill
First half: concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day. (Academic year—day; summer 1963—English 183 (3).)

192 *Medieval Legend and Saga* (3) — Allee
Celtic and Norse. (Summer 1963.)

199–200 *Proseminar: Readings for the English Literature Major* (3–3) — Tupper, Highfill, Reesing
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

223–24 *Old English* (3–3) — Allee
English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf. (Not offered 1963–64.)

235–36 *Studies in Shakespeare and His Contemporaries* (3–3) — Tupper
Prerequisite: English 135–36. (Academic year—evening; summer 1963—English 236 (3).)

239–40 *Studies in 17th Century Literature* (3–3) — Reesing
Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton. (Not offered 1963–64.)

241–42 *Studies in Neoclassical Literature* (3–3) — Highfill
Prerequisite: English 141–42. (Academic year—evening.)

251–52 *Studies in the Romantic Movement* (3–3) — Reesing
Prerequisite: English 151–52. (Not offered 1963–64.)

261–62 *Studies in Victorian Literature* (3–3) — Shepard
Prerequisite: English 161–62. (Academic year—evening.)

265–66 *Studies in 20th Century Literature* (3–3) — Linton
Eliot and his contemporaries. (Not offered 1963–64.)

273–74 *Research Methods and Bibliographical Materials* (3–3)
For description of course see American Literature 273–74, page 238.

295–96 *Studies in the History of English Literary Criticism* (3–3) Shepard
Open to undergraduates with the approval of the instructor. (Not offered 1963–64.)

299–300 *Thesis* (3–3) The Staff

AMERICAN LITERATURE

FIRST GROUP

71–72 *Introduction to American Literature** (3–3) Cole and Staff
A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1X. (Academic year—day and evening; summer 1963.)

SECOND GROUP*

170 *The American Short Story* (3) Coberly
The historical development of the short story in America. (Fall—day.)

171–72 *Studies in American Literature* (3–3) Lyon
Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51–52 or 71–72. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

173–74 *Major American Poets* (3–3) Lyon
Advanced critical study of significant writers and movements. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day; summer 1963—English 174 (3).)

175–76 *American Drama* (3–3) Cole
Historical and critical study of significant plays and forms. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years; academic year—evening; summer 1963—English 176 (3).)

177–78 *American Fiction* (3–3) Coberly
Historical and critical study of significant novels and short stories. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

179–80 *Proseminar: Readings for American Thought and Civilization Majors* (3–3) The Staff
Conferences and group discussions. (Academic year—day and evening.)

THIRD GROUP

271–72 *Seminar in American Thought* (3–3) Walker
Intensive consideration of specific periods and themes, primarily literary, in the history of American civilization. Prerequisite: English 171–72 or the equivalent. (Not offered 1963–64.)

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* All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, Slavic Languages, or Spanish) will follow the sequence of English 1 or 1X, both semesters of one of the introductory literature courses, and English 4.
English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, Slavic Languages 91–92, or Spanish 51–52 is prerequisite to all second-group courses except English 171–72.

273–74 *Research Methods and Bibliographical Materials* (3–3)
To acquaint graduate students with the principal sources of bibliography and with typical problems in research. (Academic year—evening.)

277–78 *Studies in American Fiction* (3–3) Coberly
Prerequisite: English 177–78 or the equivalent. Open to the undergraduate with the approval of the instructor. (Not offered 1963–64.)

281–82 *Reading Course in American Civilization* (3–3) Walker
A consideration of the principal descriptive and interpretative works dealing with American civilization, with emphasis on the interdisciplinary understanding of this subject. Prerequisite: at least one upper-division or graduate course in both American literature and American history. (*First half:* fall—evening. *Second half:* not offered 1963–64.)

287–88 *Reading Course in American Fiction* (3–3) Coberly
Primarily for graduate students, designed to cover the literature and the critical materials for which the student will be responsible on comprehensive and final examinations. (*First half:* not offered 1963–64. *Second half:* spring—evening.)

289–90 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72 *Greek and Roman Backgrounds in Literature* (3–3)
Education 136, *Teaching English*
History 151–52, *English History*
Philosophy 111–12, *History of Philosophy*
Speech B, *American Speech for Foreign Students*
Speech 102, *Oral Interpretation of Literature*

GEOGRAPHY AND REGIONAL SCIENCE

Professors R. D. Campbell *(Chairman)*, H. W. Westermann
Professorial Lecturer V. P. Petrov
Associate Professor J. T. Davis
Associate Professorial Lecturer M. F. Levine
Assistant Professor A. R. Gassaway

FIRST GROUP

51 *Introduction to Geography* (3) The Staff
A study of place attributes and characteristics, patterns and associations of physical and cultural earth features. (Fall—day; spring—evening; summer 1963.)

52 *World Regions* (3) The Staff
The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man. (Fall—evening; spring—day; summer 1963.)

SECOND GROUP

103–4 *Cartography* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Principles of cartographic drafting; elementary map projections; map and graph planning design and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester. (Academic year—Saturday morning.)

124 *Land Capabilities* (3) Davis
Evaluation of land capabilities based on analysis of locational, physical, economic, and social land characteristics. Principles of site analysis and best use. Systems of measurement of area potential. (1963–64 and alternate years: fall—evening.)

125 *Transportation Complexes* (3) Davis
A study of transportation networks and systems by which people, things, and ideas are given varying degrees of place utility. An analysis of the role of transportation in urban, national, and international relationships. (1963–64 and alternate years: spring—evening.)

126 *World Economies* (3)
Description and comparison of differing regional economies—pastoral, agricultural, industrial; patterns of world distribution. (1964–65 and alternate years.)

127 *World Population and Settlement* (3)
Population composition, structures, and distribution; characteristic world settlement patterns in terms of population organization. Assessment of factors contributing to population pressures, explosions and migrations, urban and rural settlement patterns and trends. (1964–65 and alternate years.)

133 *Regional Industrial Structures* (3)
The nature of the industrial complex, types and distribution of industry, principles of industrial and economic development planning. (1964–65 and alternate years.)

134 *Location of Industry* (3)
Structure and development of the major world industries, industrial location requirements, principles of industrial equilibrium. (1964–65 and alternate years.)

137 *Industrial Planning for Underdeveloped Areas* (3)
The appraisal of industrial development potentials in non-industrial areas; the preparation and implementation of industrial development plans; peculiar problems of industrial development in traditional societies; the role of industrialized countries, with particular emphasis on United States responsibilities. (Fall—day.)

141–42 *Urban Settlement* (3–3) Davis
Location, functions, and forms of cities; urban-rural relationships; the urban hierarchy; urban problems and the history of their development; the city of the future. (1963–64 and alternate years: academic year—day.)

145 *World Cultural Geography* (3) Campbell
A study of differences in national character structures; modal behavior patterns and personality traits typical of various cultures; difficulties these differences present in interpersonal relations and intercultural communications. (Fall—day.)

146 *World Political Geography* (3) Campbell
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Spring—day.)

151 *United States** (3) (Formerly Geography 181)
(Not offered 1963–64.)

* Regional Survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 165–66, *Economic History and Problems of Latin America;* History 164, *South America since Independence;* and Political Science 177, *Recent Trends in Latin American Politics and Government.*

153 *Western Europe** (3) (Formerly Geography 183)
(1964–65 and alternate years.)

154 *The Mediterranean** (3) (Formerly Geography 184)
(1964–65 and alternate years.)

155 *Africa** (3) (Formerly Geography 185) Gassaway
(Fall—day; summer 1963; offered as Geography 185 (3).)

156 *The Middle East** (3) (Formerly Geography 186) Gassaway
(Spring—day.)

161 *Latin America** (3) (Formerly Geography 191)
(Fall—day.)

164 *Communist China** (3) (Formerly Geography 194)
(1964–65 and alternate years.)

165 *Eastern and Southeastern Asia** (3) (Formerly Geography 195)
(Spring—day.)

166 *The Soviet Union** (3) (Formerly Geography 196)
(1964–65 and alternate years.)

167 *The Pacific** (3) (Formerly Geography 197)
(Not offered 1963–64.)

168 *Australia** (3) (Formerly Geography 198)
(Not offered 1963–64.)

173–74 *City Planning: Theory and Practice* (3–3)
Theories of city functions and structures; evaluation of urban activities, value systems; analysis of contemporary urban problems; optimum designs for future cities; theory and techniques of planning; action techniques; implementation of plans. (1964–65 and alternate years.)

175–76 *City Planning: Survey and Design* (3–3)
Information systems for city planning; methods of analysis of urban data; and the design of proposed urban development and renewal. (*First half:* summer 1963. *Second half:* not offered 1963–64.)

179–80 *Readings in Urban and Regional Development* (1–1) The Staff
(Academic year—as arranged.)

189–90 *Readings in Geography* (1–1) The Staff
(Academic year—as arranged.)

199–200 *Theory of Regions* (3–3)
Area synthesis; comparison of the constructs region, system, and field; delineation, measurement, and analysis. (Not offered 1963–64.)

THIRD GROUP†

201–2 *Seminar: History and Philosophy of Geography* (3–3)
A year course; credit is not given for the first half until the second half is completed. A study of the development of geographic thought and an attempt to develop a useful, contemporary philosophy of geography. (1964–65 and alternate years.)

* See footnote on page 72
† Senior major or graduate status is required in all third-group courses.

205–6 *Area Data Collection and Analysis* (3–3) Davis
A year course: credit is not given for the first half until the second half is completed. Lecture (1 hour), laboratory and field (3 hours). Sources of regional information, methods and systems of data collection; quantitative and qualitative methods of analysis; systems of synthesis. (1963–64 and alternate years: academic year—evening.)

211–12 *Reading Course in Economic Geography* (3–3)
The development of economic geography as a systematic approach to regional analysis, the literature of economic geography, research methods. (Not offered 1963–64.)

233–34 *Seminar: Regional and Urban Planning* (3–3)
A year course: credit is not given for the first half until the second half is completed. Analysis of the planning function, major problems confronting the planner, contemporary status of planning—its areas of success and failure. (Academic year—evening.)

241–42 *Seminar: Place and Culture* (3–3) Campbell
A study of the culture traits which characterize various ethnic groups and differentiate people-place associations. (1963–64 and alternate years: academic year—evening.)

251–52 *Seminar: World Problem Areas* (3–3) Gassaway
A study of those parts of the world which have become matters of international concern, whether because of their political or social instability, unsound economic development, or aggressive tendencies. An evaluation of the complex of factors which have created the "problems". (Academic year—evening.)

266 *Seminar: the Sino-Soviet Area* (3) Petrov
Natural resources and economic potentials of the Sino-Soviet Block with emphasis on Sino-Soviet borderlands. Resources and population pattern of the border regions—Sinkiang, Outer Mongolia, Inner Mongolia, Manchuria, Soviet Central Asia and the Far East, North Korea, and North Vietnam—will be surveyed. (Fall—evening.)

295–96 *Research* (3–3) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following courses for students undertaking work toward the degree of Bachelor of Science in Cartography, which is administered by the College of General Studies. For information concerning the degree in Cartography, see the brochure on the subject.

Cartography Program

Geography

51 *Introduction to Geography* (3)
52 *World Regions* (3)
115–16 *Physical Geography* (3–3)
124 *Land Capabilities* (3)
125 *Transportation Complexes* (3)

Cartography

1 *Map Interpretation* (3)
11 *Cartographic Drafting and Descriptive Geometry* (3)
12 *Topographic Surveying* (3)

13 *Higher Surveying* (3)
17–18 *Elementary Photogrammetry* (3–3)
110 *Map Projections* (2)
111 *Map Reproduction* (1)
155 *Elementary Geodesy* (3)
156 *Geodetic Astronomy* (3)
160 *Theory of Errors and Geodetic Adjustments* (3)
191–92 *Map and Chart Construction* (3–3)

Oceanography

101–2 *Introductory Oceanography* (3–3)

GEOLOGY

Professor Geza Teleki *(Chairman)*
Professorial Lecturers C. L. Christ, Michael Fleischer, H. T. Evans, Jr., I. G. Sohn, Nicholas Hotton
Associate Professor G. V. Carroll
Associate Professorial Lecturers Daniel Appleman, P. M. Kier, J. T. Dutro, Jr.
Lecturer Irving Friedman

FIRST GROUP

1–2 *Introductory Geology* (3–3) The Staff
Lecture (2 hours), laboratory and field trip (2 hours). A survey course covering the principles of geology. Laboratory fee, $6 a semester. (Academic year—day; summer 1963.)

12 *Minerals and Rocks* (3) Carroll
Lecture (2 hours), laboratory (3 hours). Introduction to the common minerals and rocks and their environments; identification of minerals by determination of their physical properties and by the use of elementary chemical tests. Prerequisite: Geology 1. Laboratory fee, $8. (Spring—day.)

SECOND GROUP

101 *History of Geological Sciences* (2) Teleki
Lectures on the development of geological thought and the history of geological and related sciences. (1964–65 and alternate years.)

107 *Dynamic Geology* (3) Teleki
Lecture (3 hours), recitation (1 hour). The interrelation of endogene and exogene forces in the processes of sedimentation and vulcanism; geochemical and geophysical aspects of epicontinental and geosynclinal areas. Prerequisite: Geology 1; Physics 11, 12; or permission of the instructor. (Fall—day.)

111–12 *Mineralogy* (3–3) Carroll
A year course, credit is not given for the first half until the second half has been completed (except for chemistry majors who may receive credit for the first half only). Lecture (2 hours), laboratory (3 hours). *First half:* morphological crystallography and elementary aspects of optical crystallography with their application to the identification of minerals. *Second half:* optical mineralogy; identification of nonopaque minerals by use of the polarizing microscope. Prerequisite: Geology 1 and 12; Physics 11, 12, or permission of the instructor. Laboratory fee, $10 a semester. (Academic year—evening.)

115 *Petrography* (4) Carroll
Lecture (2 hours), laboratory (4 hours). Megascopic and microscopic identification and classification of common rocks. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

116 *Sedimentary Petrography* (4)
Lecture (2 hours), laboratory (4 hours). The mineralogy and chemistry of sediments and sedimentary rocks; identification, description, and classification of sedimentary rocks with megascopic and microscopic methods. Prerequisite: Geology 111–12. Laboratory fee, $10. (1964–65 and alternate years.)

117 *Introduction to Petrology* (3) Carroll
Lecture (2 hours), laboratory (3 hours). Lectures on petrogenic theory with emphasis on igneous and metamorphic rocks; laboratory work on the diagnosis of rock genesis by polarizing microscopic determination of mineralogical and textural characteristics. Prerequisite: Geology 115. Laboratory fee, $10. (Fall—evening.)

122 *Structural Geology* (3) Carroll
Lecture (2 hours), laboratory and field trips as arranged. Genetic interpretation of geologic formations on the basis of their structures, with emphasis on applications to geological field work. Prerequisite: Geology 1–2 or 1 and 12. (Spring—day.)

123 *Tectonics* (3) The Staff
Lecture (1 hour), laboratory (4 hours.) Introduction to specialized techniques of structural analysis, and to tectonic theory. Prerequisite: Geology 122. Recommended: Applied Science 3. (1964–65 and alternate years.)

125 *Marine Geology* (3) The Staff
Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geology 1–2 or 1 and 12; for students of fields other than geology, permission of the instructor. (Fall—day.)

128 *Geomorphology* (4) Teleki
Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 107 or Geography and Regional Science 115–16. (1964–65 and alternate years.)

130 *Photointerpretation* (4) Teleki
Lecture (2 hours), laboratory (3 hours). Principles of photogrammetry, interpretation of geographical and geological features on aerial photographs, evaluation of data with stereoscopic methods. Laboratory fee, $10. (Spring—evening.)

151–52 *Invertebrate Paleontology* (3–3) Teleki
Lecture (2 hours), laboratory (3 hours), field trips as arranged. Classification and evolution of fossil invertebrates, paleoecology of invertebrate organisms. Prerequisite: Geology 1–2 or 1 and 12. Laboratory fee, $8 a semester. (Academic year—day.)

154 *Vertebrate Paleontology* (3) Hotton
Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (1964–65 and alternate years.)

157 *Methods in Paleontology* (3) **Sohn**
An introduction to the principles and techniques of paleontological research, including the rules of zoological nomenclature. Prerequisite: Geology 151–52. (Fall—evening.)

163 *Sedimentation* (4)
Lecture (2 hours), laboratory (4 hours). Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 12 and 107. Laboratory fee, $10. (Fall—day.)

166 *Stratigraphy* (4) **Teleki**
Lecture (2 hours), laboratory (4 hours). Sedimentation, facies, evaluation of stratigraphic boundaries, principles of correlation, applied stratigraphic geology. Prerequisite: Geology 107, 115, 122, 163. (Spring—day.)

173 *Regional Geology* (3) **Carroll and Staff**
Lecture (3 hours), recitation (1 hour). Lecture and map work on the regional distribution of geological formations and structures. This course may be reelected for credit. Prerequisite: Geology 107, 122, or permission of the instructor. (Fall—day.)

192 *Laboratory Techniques* (2)
Lecture (1 hour), laboratory (3 hours). An introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, $15. This course may be repeated for credit, with the approval of the Department. (Fall and spring—evening.)

THIRD GROUP

205–6 *Seminar in Geology* (3–3) **The Staff**
Special topics. Does not repeat itself and may be elected in successive years. (Academic year—as arranged.)

211 *X-ray Crystallography* (3) **Christ**
The structure of crystals as determined by the X-ray method (1964–65 and alternate years.)

212 *Crystal Chemistry*[a] (3) **Evans**
Chemistry of the solid state. Bounding and coordination and the role of crystalline structure in chemistry and mineralogy. (1964–65 and alternate years.)

241 *Geochemistry*[a] (3) **Fleischer**
Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species. (Fall—evening.)

244 *Isotope Geology*[a] (3) **Friedman**
Investigation of geological phenomena by means of stable and unstable isotopes of elements and of changes in their abundance. (Spring—evening.)

251–52 *Micropaleontology* (4–4) **Sohn**
Lecture (2 hours), laboratory as arranged. Identification with the binocular microscope of Ostracoda and other fossil micro-organisms. Micropaleontological techniques, paleontological research methods, taxonomy, and paleoecology. Age determination and correlation of stratigraphic units. Laboratory fee, $12 a semester. (1964–65 and alternate years.)

257–58 *Seminar in Paleontology* (3–3) **The Staff**
Independent topics each semester. Can be elected for either semester. Does not repeat itself and can be reelected for credit. (Academic year—as arranged.)

[a] Prerequisite: an adequate background in physics and chemistry, to be determined in conference with the instructor.

267–68 *Seminar in Stratigraphy* (3–3) The Staff
Independent topics each semester. Can be elected for either semester does not repeat itself and can be reelected for credit. (1964–65 and alternate years.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

GERMANIC LANGUAGES AND LITERATURES

Professors W. K. Legner *(Chairman)*, Gretchen Rogers
Associate Professor J. C. King
Assistant Professors H. D. Osterle, Klaus Thoenelt
Associate Anne Cordero

FIRST GROUP

1–2 *First-year German* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

3–4 *Second-year German* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: German 1–2 or two years of high school German. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 *German Conversation and Composition* (3–3) Osterle
Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (Academic year—day.)

47 *Beginning German for Reading Examination Candidates* (0) The Staff
Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, $108. (Fall and spring—evening; summer 1963.)

49 *German Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or the equivalent. (Fall and spring—evening; summer 1963.)

51–52 *Introduction to German Literature* (3–3) Osterle
Prerequisite: German 4 or the equivalent. (Academic year—evening.)

SECOND GROUP

103–4 *Goethe's "Faust"—Parts I and II* (3–3) Legner
(1964–65 and alternate years.)

131–32 *German Literature of the 18th Century* (3–3) Rogers
The age of Lessing, Goethe, and Schiller. (1963–64 and alternate years: academic year—evening.)

141–42 *German Literature of the 19th Century* (3–3) — King
Romanticism, Biedermeier period, Young Germany, Realism. (1963–64 and alternate years: academic year—evening.)

151–52 *German Literature of the 20th Century* (3–3) — Rogers
(1964–65 and alternate years.)

179–80 *Advanced Composition for Undergraduate and Graduate Majors* (1–1) — King, Legner
(Academic year—as arranged.)

THIRD GROUP

201–2 *Middle High German* (3–3) — Legner
(1963–64 and alternate years: academic year—evening.)

205–6 *Gothic* (3–3) — Legner
Introduction to the comparative study of Germanic languages. (1964–65 and alternate years.)

209–10 *Old High German* (3–3) — King
(1964–65 and alternate years.)

213–14 *Old Norse* (3–3) — Allee
(1963–64 and alternate years: academic year—evening.)

219 *Teaching German in College* (3) — The Staff
Methodology, observation, and apprenticeship in college classes and the language workshop. (Fall—as arranged.)

223–24 *Linguistic Analysis of Modern German* (3–3) — King
Treatment of phonetics, phonemics, morphology, and syntax. (1963–64 and every third year: academic year—day.)

225–26 *Seminar: Linguistics* (3–3) — King, Allee
Bibliography, methodology, readings, and research problems. (1965–66 and every third year.)

227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) — King
Old Indic language and literature. (1964–65 and alternate years.)

229 *German Literature of the 15th and 16th Centuries* (3) — Legner
Transition from chivalric to bourgeois literature. The eras of Humanism and the Reformation as reflected in the principal literary works. (1963–64 and alternate years: fall—day.)

230 *German Literature of the 17th Century* (3) — Legner
Imitation of foreign models. The literary societies. Preciosity. The beginnings of realism in the novel. Pietism. (1963–64 and alternate years: spring—day.)

231–32 *German Classicism* (3–3) — Rogers
An advanced study and critique of the literature of the Goethezeit. Prerequisite: German 131–32 or the equivalent. (1964–65 and alternate years.)

241–42 *Seminar: German Romanticism* (3–3) — King
Treatment of individual writers, groups, motifs, and tendencies. (1964–65 and alternate years.)

251–52 *Seminar: Studies in 20th Century German Literature* (3–3) — Rogers
Special projects in fiction, drama, poetry, and criticism. (1963–64 and alternate years: academic year—day.)

261–62 *German-English and German-American Literary Relations and Interactions* (3–3) — Osterle
Comparative study of major genres. Appraisal of influences. (Not offered 1963–64.)

271–72 *Seminar: German Literature* (3–3) Thoenelt
French-German literary interactions and contrasts. *First half:* Romantic and realistic narrative and essay. *Second half:* Romain Rolland, Camus, René Schickele, Heinrich Mann. (Academic year—evening.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree in German. (Academic year—as arranged.)

GOVERNMENT AND BUSINESS

Professors R. D. Kennedy *(Emeritus)*, A. R. Johnson, J. L. Jessup, J. C. Dockeray*, *(Chairman)*, D. S. Brown, A. M. Woodruff, F. H. Gibbs, G. C. Jacobus, R. B. Eastin, R. F. Erieson, G. L. Lippitt, E. J. B. Lewis, T. H. Carroll, Waldo Sommers
Professorial Lecturers S. N. Alexander, C. G. Berns, F. C. Brimacombe, J. L. Buckler, C. W. Clewlow, L. C. Collins, F. V. Demaret, L. W. Hamilton, Frank Higginbotham, C. E. Houston, Robert Kaye, J. L. Krieger, K. F. McClure, Edward McCrensky, C. A. McLaughlin, J. P. Murphy, M. E. Ogdon, J. M. Parrish, W. J. Peeples, F. I. Shaffner, Clark Simpson, I. E. Steele, J. N. Stonesifer, K. E. Stromsem, Clark Tibbitts, W. G. Torpey, C. E. Goode
Associate Professors F. C. Kurtz, John Clayton *(Research)*, Leon Gintzig, D. R. Cloutier, J. G. Brown
Associate Professorial Lecturers C. M. Campbell, O. C. Disler, J. F. Doubleday, George Idelson, V. B. Lewis, F. K. McTyier, J. A. Morrow, Ross Pollock, John Provan, J. R. Snitzler, M. H. Schwartz, P. C. Tosini, J. V. Milano
Assistant Professors H. R. Page, R. E. Griffiths, A. D. Larson, D. M. Faulkner, M. G. Gallagher, L. C. Smith
Lecturers R. J. Bond, Jerome Bracken, C. J. Brinkman, D. K. Good, Donald Gross, F. X. McKenna, J. F. Regan, D. E. Russell, L. E. This, D. E. Van Tijn, K. F. Joy
Associate J. K. Palmer

ACCOUNTING

FIRST GROUP

1–2 *Introductory Accounting* (3–3) The Staff
First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. *(First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3 *General Accounting* (3) The Staff
Study of accounting systems and accounting for single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data. (Not offered 1963–64.)

* On sabbatical leave spring semester 1963–64.

SECOND GROUP

101 *Cost Accounting* (3)

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; and analysis and interpretation of cost data. Prerequisite: Accounting 1–2. (Fall—day and evening; spring—day; summer 1963.)

102 *Advanced Cost Accounting* (3)

Advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor. (Spring—evening.)

111 *Financial Statement Analysis* (3) Kennedy, Steele

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—day; spring—evening; summer 1963.)

115 *Survey of Accounting* (3) Disler, Gallagher

Accounting for single proprietorships and corporations with emphasis on the use of accounting information in the management process; study of theory, terminology, and the analysis and interpretation of accounting data. Not open for credit to Accounting or Business Administration majors. (Fall and spring—evening; summer 1963.)

121–22 *Intermediate Accounting* (3–3) Gallagher, Simpson

First half: valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor. (Academic year—day and evening.)

132 *Accounting Theory* (3) Kennedy

Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting. (Spring—day; summer 1963.)

141 *Governmental Accounting* (3) Lewis

Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1–2 or permission of the instructor. (Fall—evening.)

144 *Federal Accounting* (3) Lewis

Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of the United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor. (Not offered 1963–64.)

147 *Federal Budgeting* (3) Lewis

Budgetary procedures in the Federal Government, with emphasis on agency level budget programming, budget formulation and the techniques for achieving management objectives through the budget process; cost-based budgeting; expenditure programming and accrued expenditure limitations; revenue estimating. Prerequisite: Accounting 144 or extensive experience in federal budgeting. (Spring—evening.)

161 *Income Tax Accounting* (3) Kurtz

Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1–2. (Fall—day and evening.)

Kurtz

162 *Federal Tax Practice* (3)
Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, and gifts; use of the tax services; assessment, collection, and refund procedures. Prerequisite: Accounting 161 or the permission of the instructor. (Spring—evening.)

Kurtz

171 *Auditing* (3)
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22. (Fall—evening.)

Kurtz

172 *Auditing Practice* (3)
Preparation of audit reports, accounting statements to be filed with Securities and Exchange Commission, and current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor. (Spring—evening.)

Lewis

181 *Accounting Systems* (3)
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–22, and 171, or permission of the instructor. (Fall—evening.)

Kurtz, Simpson

191 *Advanced Accounting* (3)
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. (Fall—evening; summer 1963.)

Lewis, Buckler

193 *Business Budgeting* (3)
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2. (Fall—day; spring—day and evening; summer 1963.)

196 *Accounting Policy and Control* (3)
Accounting decision-making and analytical techniques, emphasizing the financial policy and operational role of the accountant and his contribution to enterprise management. Readings, cases, and problems form a basis for class discussions. Prerequisites: Accounting 101, 111, 161, and 171, or permission of the instructor. (Not offered 1963–64.)

Lewis

198 *Professional Accounting Review* (3)
Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor. (Spring—evening.)

THIRD GROUP

Kennedy, Higginbotham

211–12 *Managerial Accounting* (3–3)
First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2 or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor. (*First half:* not offered 1963–64. *Second half:* summer 1963.)

Higginbotham, Kennedy

215 *Survey of Managerial Accounting* (3)
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1–2, 3, or 115, or permission of the instructor. (Fall and spring—evening.)

231 *Contemporary Accounting Theory* (3) Kurtz, Higginbotham
Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Admission by permission of the instructor. (Fall—evening.)

246 *Governmental Accounting and Budgeting Problems* (3)
Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 144 or permission of the instructor. (Not offered 1963–64.)

275 *Internal Control and Auditing* (3) Kurtz
Internal accounting controls; review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor. (Not offered 1963–64.)

295–96 *Seminar in Accounting* (3–3) Kennedy
Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor. (Academic year—evening.)

297–98 *Accounting Reading and Research* (3–3) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

BUSINESS AND PUBLIC ADMINISTRATION

THIRD GROUP

201 *Advanced Administrative Management* (3) Eastin, Ericson, Gibbs
(Formerly Business Administration 201 and Public Administration 210)
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall—day and evening; spring—evening; summer 1963.)

204 *Quantitative Factors in Administration* (3) Gross, Van Tijn
Developments in quantitative methods of administration. (Fall and spring—evening.)

205 *Seminar in Communication and Executive Action* (3) Morrow
(Formerly Public Administration 242)
Seminar in the communications processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication. (Spring—evening.)

206 *Personnel Management* (3) Torpey
(Formerly Public Administration 231)
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement. (Fall—evening.)

207–8 *Human Relations in Administration* (3–3) Eastin, Brown
(Formerly Business Administration 275–76 and Public Administration 241)
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized. (Academic year—evening; summer 1963—Business and Public Administration 207 (3).)

262 *Contemporary Administrative Theory and Practice* (3) Ericson
(Formerly Public Administration 262)
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research. (Spring—evening.)

268 *Management Engineering* (3) Clewlow
(Formerly Business Administration 268 and Public Administration 216)
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurements, work simplification management audits, and other management improvement programs. (Fall—day and evening; spring—evening.)

287 *Relation of Government to Business* (3) Clayton
(Formerly Business Administration 278 and 287)
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—evening.)

BUSINESS ADMINISTRATION

SECOND GROUP

101 *Introduction to Business* (3)
(Formerly Business Organization and Combination)
The business environment; its effects upon the decision making process. (Fall—day and evening; spring—day.)

102 *Fundamentals of Management* (3) Ericson, Page
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. (Fall and spring—day and evening; summer 1963.)

105 *Personnel Management* (3) Eastin, Stonesifer
Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1963.)

106 *Problems in Personnel Management* (3) Eastin, Stonesifer
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105. (Spring—evening.)

107 *Labor Management Contracts* (3) Sommers, Larson
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor-management relations. (Fall—day; spring—evening.)

109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. (Fall and spring—evening.)

113 *Real Estate* (3) Doubleday
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation. (Fall—evening.)

121 *Risk Management* (3) Doubleday
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. (Spring—evening.)

122 *Life Insurance and Estate Planning* (3) Campbell
Life insurance contracts, their use in providing protection and estate development. (Spring—evening.)

131 *Business Finance* (3) Clayton, Page
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. (Fall—day; spring—day and evening; summer 1963.)

136 *Credit Management* (3)
Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2. (Spring—evening.)

138 *Investments* (3) Dockeray, Shaffner
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2, Business Administration 131. (Spring—day.)

141 *Basic Marketing* (3)
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1–2. (Fall—evening; spring—day; summer 1963—offered as *Principles of Marketing* (3).)

142 *Marketing Management Problems* (3)
Practical problems of retailers, wholesalers, and manufacturers considered through the use of cases and text material; fundamental considerations in marketing decisions and the nature of the problem-solving process. Prerequisite: Business Administration 141. (Spring—day.)

143 *Marketing Research* (3)
Principles and practices of marketing research with particular emphasis upon basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening.)

145 *Sales Management* (3)
Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141. (Spring—evening.)

147 *Advertising* (3) Idelson
Advertising as a function of marketing and merchandising; uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Fall—evening.)

150 *Procurement and Materials Management* (3)
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government. (Spring—evening.)

153 *Principles of Personal Selling* (3)
Basic principles that underlie personal selling and the practical application of these principles. Emphasis is given to the human factor. Career opportunities and the role of selling in our economy are also considered. (Not offered 1963–64.)

158 *Traffic Management* (3) Kaye
Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies. (Not offered 1963–64.)

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Collins, McClure
(Fall—day and evening.)

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) Collins, Murphy
(Spring—day and evening.)

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) Murphy
(Fall—evening.)

171 *Principles of Transportation* (3) Clayton
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation. (Fall—evening.)

172 *Public Utilities* (3) Clayton
Legal and economic meaning of the public utility concept; development, services, economic characteristics, ratemaking, and regulation of the various utility industries, with particular emphasis on electric, gas, telephone, and urban transit industries. (Spring—evening.)

173 *Commercial Motor Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates and regulation of motor transport firms; highways and highway financing considered from the point of view of both producers and users of the services. (Not offered 1963–64.)

174 *Commercial Air Transportation* (3) Clayton
Organization, management, services, economic characteristics, rates, and regulation of air transport firms; policies and activities of the government in the development, promotion, and control of air transport. (Not offered 1963–64.)

175 *Introduction to Foreign Trade* (3) Kaye
Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2. (Fall—evening.)

176 *Exporting and Importing* (3) Kaye
Policy and operating problems of foreign trade, financing, documentation, packing and transportation of shipments, ocean marine insurance, and U. S. Customs procedure and formalities. (Spring—evening.)

178 *International Business Operations* (3) Ogden
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different areas of the world. (Not offered 1963–64.)

181 *Manufacturing Production* (3) Page
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening.)

191 *Business Reports and Analyses* (3)
Sources of management information, array and analysis of data, interpretation and presentation of the findings. (Not offered 1963–64.)

193 *Management Communication* (3) Eastin, Morrow
A survey course in the problems of communication; written communication; style and format; oral communication: oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects. (Fall—evening; spring—day.)

195 *Controllership* (3)
The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1–2. Open to seniors. (Fall—evening.)

198 *Case Problems in Management* (3) Eastin, Page
Principals and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall and spring—day and evening.)

THIRD GROUP

209 *Seminar in Personnel Management* (3) Eastin
Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening.)

210 *The Personnel Manager* (3) Jessup
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive. (Spring—evening.)

213 *Urban Land Management* (3) Woodruff
Background course for the developing curriculum in city planning. The course traces the forces that lie behind investment decisions which in turn determine the development of cities. (Spring—evening.)

218 *Survey of Data Processing* (3) Tosini
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems. (Fall and spring—evening.)

219 *Digital Computer Programming Concepts* (3) Schwartz
Machine functions and programmed control, instructions and programs, sub-routines, general purpose programming, business oriented programming languages. Prerequisite: Business and Public Administration 204 or permission of instructor. (Fall—evening.)

220 *Comparative Digital Computer Systems* (3) Schwartz
Properties and capacities of the range of equipments in use today, special purpose business equipments, recent and prospective equipment developments. Prerequisite: Business Administration 219. (Spring—evening.)

221 *Application of Digital Computers* (3) Alexander
The integration of data processing in the regular operations of the business or government organization and in establishing flows of management information, systems planning, the impact of Automatic Data Processing on management organization and decision making. Prerequisite: Business and Public Administration 204 and Business Administration 220. (Fall—evening.)

222 *Seminar in Advanced Digital Computer Concepts* (3) Alexander
Study of advanced problems in the design and application of computer systems. (Spring—evening.)

227 *Linear Programming* (3) Bracken
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies. (Fall—evening.)

228 *Introduction to Operations Research for Management* (3) Bracken
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined. (Spring—evening.)

231 *Corporate Financial Problems* (3) Dockeray, Houston
Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization. (Fall—evening.)

232 *Seminar in Business Finance* (3) Dockeray, Houston
Research in advanced financial problems. (Spring—evening.)

237 *Investment Analysis* (3) Dockeray, Shaffner
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138. (Fall—evening.)

238 *Seminar in Investments* (3) Dockeray, Shaffner
Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138. (Spring—evening.)

241 *Advanced Marketing Management* (3)
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis. (Fall—evening; summer 1963—offered as *Seminar in Marketing* (3).)

242 *Seminar in Marketing* (3)
Critical review of the development of marketing thought and important marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening.)

243 *Advanced Marketing Research* (3)
Marketing research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and results, applications of marketing research. Cases, selected readings, and research project. Prerequisite: a course in basic statistics. (Spring—evening.)

247 *Advertising Management* (3)
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Not offered 1963–64.)

248 *International Marketing* (3)
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Not offered 1963–64.)

250 *Contract Administration* (3) Lazure
The management of government contracts with private suppliers. (Not offered 1963–64.)

251 *Retail Management* (3)
Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis. (Fall—evening.) Ogdon

255–56 *Seminar in Foreign Trade* (3)
Research, analysis, and discussion of foreign trade institutions, public and private. (Academic year—evening.) The Staff

273–74 *Readings in Business* (3–3)
Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor. (Academic year—evening.) Jessup

286 *Management in the Armed Forces* (3)
Special problems of military organization and management; applicability of business management techniques to the armed forces. (Not offered 1963–64.) Krieger

288 *Executive Leadership* (3)
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations. (Fall—evening.)

291 *Seminar in Business Management* (3) Ericson, Page
Research on various phases of management as practiced in American industry. (Fall and spring—evening.)

293–94 *Business Research* (3–3) The Staff
First half: not offered 1963–64. *Second half:* summer 1963.

296 *Seminar in Controllership* (3)
Research on advanced problems of the controller in all types of business organization and the Federal Government. (Spring—evening.)

297 *Case Studies in Business Administration* (3) Jessup
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc. (Fall and spring—evening.)

299 *Thesis Seminar* (3) Dockeray and Staff
An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1963.)

300 *Thesis* (3) The Staff
(Fall and spring—as arranged; summer 1963.)

HEALTH CARE ADMINISTRATION

THIRD GROUP

202 *Introduction to Health Care Administration* (3) Griffiths
Lecture and discussion (2 hours), laboratory (2 hours). Survey of community health services, public health organizations, voluntary agencies, and private practitioners (with attention to state and national health resources); medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening.)

203–4 *Organization and Management I–II* (3–3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). The history and current character of institutional health care. Organizational functions and structure of various kinds of hospitals and clinics, including long-term-care facilities such as mental hospitals, homes for the aged, nursing homes, and others related to health care administration. (Academic year—day and evening.)

205 *Hospital Management Procedures* (3) Gintzig
Lecture and discussion (2 hours), laboratory (2 hours). A survey of hospital law; a study of hospital forms, procedures, and systems; hospital programs pertaining to disaster relief, safety, fire prevention; personnel, purchasing, and volunteer services; and the operational peculiarities of hospital departments. Prerequisite: Health Care Administration 203. (Fall—day and evening.)

206 *Case Studies in Health Care Administration* (3) Gibbs
A discussion of general ideas about administration as applied to practical cases. Emphasis is placed on policy making, planning, and controlling in hospitals. Prerequisite: Business and Public Administration 201 and Health Care Administration 203. (Spring—day and evening.)

207 *Management Analysis in Health Care Institutions* (3) Gintzig
Lecture (2 hours), laboratory (2 hours). Methods of collection, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. One day each week is spent in a medical care institution. This time is devoted to an investigation on which written and oral reports are based. Prerequisite: Health Care Administration 203 and 205. (Spring—day and evening.)

209 *Health Care Economics* (3) Griffiths
Lecture (2 hours), laboratory (2 hours). Medical economics including sources of hospital income; fund raising drives; methods of procuring, using, budgeting, and accounting for hospital funds; prepayment plans, impact on community of the cost of medical care. (Spring—day and evening.)

212 *Planning and Construction of Health Care Facilities* (3) The Staff
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of long and short health care planning, designing, constructing, equipping, and supplying. Prerequisite: Health Care Administration 202, 203. (Spring—day and evening.)

213 *Administration of Health Care Systems* (3) The Staff
The nature and special administrative requirements of federal hospital systems; health care associations at national, regional, and local levels; regional planning; health care plans and counseling activities. (As arranged.)

250 *Administration for Mental Care* (3) The Staff
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, and others. (As arranged.)

260 *Administration for Long-term Care* (3) The Staff
A survey of the medical and nursing procedures designed for administrators of long-term facilities including nursing homes and facilities for the aged. (Fall—evening.)

261 *Business Procedure in Long-term-care Facilities* (3) The Staff
Business procedures with special application to administration of facilities for long-term care including nursing homes and homes for the aged. (Spring—evening.)

262-63 *Readings in Long-term-care Administration* (3-3) The Staff
Advanced studies in selected aspects of administration of long-term-care facilities including nursing homes and homes for the aged and others. (As arranged.)

267 *Social Gerontology for the Administrator* (3) Tibbitts
A survey of information concerning the special characteristics of the elderly with which administrators of long-term-care facilities should be acquainted. (Fall—evening.)

270 *Research in Health Care Administration* (3) The Staff
Research into an assigned area dealing with Health Care Administration. (As arranged.)

285-86 *Readings in Hospital Administration* (3-3) The Staff
Advanced studies in various aspects of community health and hospital administration, and selected aspects of medical care. Admission by permission of the Coordinator. (Academic year—as arranged; summer 1963.)

293-94-95 *Residency I* (3-3-3) Gibbs
The twelve-month residency, beginning June 1 or July 1 of each year, has four major objectives: work experience under a qualified preceptor; periodic seminars with the University staff; periodic written progress reports of work accomplished; and a final written report of a major investigation. (Other courses may be substituted for Health Care Administration 294-95 as appropriate.)

296-97-98 *Residency II* (3-3-3) Gibbs
For selected students who take a second year of residency. The Staff

299-300 *Thesis* (3-3)

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, by special arrangement, the University offers the following courses for students enrolled in the Health Care Administration programs.

107 *Medical Background Terminology** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A basic course in medical background information, disease classification, and terminology.

108 *Medical Records Processing** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Detailed consideration of methods of processing, preserving, and indexing medical records.

109 *The Medical Records Department** (3) The Staff
Lecture (3 hours), laboratory (2 hours). A study of the Medical Records Department in the hospital. Its characteristics and function.

110 *Preparation and Auditing of Medical Records** (3) The Staff
Lecture (3 hours), laboratory (2 hours). The origin, development, and evolution of the medical record.

111 *Statistical Development and Analysis** (3) The Staff
Lecture (3 hours), laboratory (2 hours). Development and analysis of statistical data required by the hospital for medical record purposes.

112–13–14 *Medical Records Internship** (3–3–3) The Staff
Work projects in appropriate hospitals under qualified preceptors and with faculty supervision.

150–51 *Survey of Health Care Organization and Procedures* (3–3) The Staff
Lectures and discussions. (May be audited by students not wishing college credit.) A survey course for students in other fields or from medical care organizations who wish an over-all knowledge of organization and procedures used in hospitals, long-term care facilities such as nursing homes, and homes for the aged. This is a two semester sequence. Students wishing to take the courses for graduate credit must take the laboratory, Health Care Administration 203. Not open to majors in Hospital Administration. (Academic year—evening.)

PUBLIC ADMINISTRATION

THIRD GROUP

211 *Problems of Governmental Organizations* (3) Larson
Analysis of the application of organizational theories and practices to government agencies, with particular emphasis on internal organization and control. Special problem areas are examined, such as decentralization, staff line and field-headquarters relationships, and the role of committees. (Fall—evening; summer 1963.)

213 *Administration in Government* (3) Brown, Cloutier
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripital and centrifugal forces at work. (Fall and spring—evening.)

215 *Seminar in Comparative Administrative Systems* (3)
Examination and analysis of the administrative systems of the major foreign governments with particular attention to practices applicable to administration in the United States. (Fall—evening.)

216 *Administration of International and Supranational Activities* (3 or 6) Jordan
Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in

* Part of a sequence. Primarily for nondegree students from other countries; but may be offered for academic credit by special arrangement with the Coordinator of the Programs in Health Care Administration.

multi-national supported and staffed activities. Prerequisite: Public Administration 215. (Spring—evening.)

221–22 *Staff Functions in Government* (3–3) Brown, Cloutier
Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, security, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services. (Academic year—evening.)

225–26 *Internship in the Administrative Processes* (3–3) Sommers
This course is open only to persons selected by government agencies for participation in approved intern programs. (Academic year—as arranged.)

232 *Federal Personnel Procedures* (3) Torpey
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. (Spring—evening; summer 1963.)

233 *Seminar in Manpower Development and Utilization* (3) Sommers
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems. (Fall—evening.)

243 *Local Government Law** (2) Mallison
The decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Spring—evening.)

244 *Administration in State and Metropolitan Governments* (3)
Examination of public administration at the state and local level. Developments and trends growing out of the changing urban pattern. (Fall—evening.)

251 *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration. (Fall and spring—evening; summer 1963.)

252 *Seminar in Planning and Programming* (3) Jacobus
The administrative processes of planning and programming in government, relationship to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. This course is primarily for students who have completed Public Administration 251. (Fall—evening.)

254 *Controllership in the Federal Services* (3) Krieger
Function of the controller in federal agencies; special problems analyzed; comparison of the controller function in government and business. (Spring—evening.)

259 *Government Procurement and Property Management* (3)
Principles and problems of government procurement; accounting and inventory; storage; development of specifications; property management. (Not offered 1963–64.)

260 *Seminar in Policy Formulation and Administration* (3) Brown
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy. (Fall—evening.)

261 *Public Opinion and the Administrator* (3) Stromsem
Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs; evaluating public relations programs; the importance of timing; use of public opinion measurement techniques. (Not offered 1963–64.)

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* Same as Law 349.

271 *Reading and Conference Course in Public Management and Administration* (3) — The Staff

The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration. (Fall—evening; summer 1963.)

272 *Seminar in Public Personnel Administration* (3) — Sommers

The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration. (Spring—as arranged.)

297 *Seminar in Public Administration* (3) — Brown and Staff

Advanced research on various phases of public administration including methods of policy formulation and control, the application of systems to management, administration problems of bureaucratic relationships. (Not offered 1963–64.)

298 *Case Studies in Public Administration* (3) — Cloutier

(Formerly Public Administration 212)

Analysis and discussion of problems in public management by use of the case method. (Spring—evening.)

299 *Thesis* (3) — Larson and Staff

An examination of thesis standards, research philosophy, and methodology. (Fall and spring—evening; summer 1963.)

300 *Thesis* (3) — The Staff

(Fall and spring—as arranged; summer 1963.)

HISTORY

Professors E. L. Kayser, Wood Gray, H. M. Merriman, R. H. Davison *(Chairman)*, W. C. Davis*, R. B. Thompson
Professorial Lecturers R. P. Multhauf, G. O. Kent
Associate Professors R. C. Haskett, R. P. Sharkey
Associate Professorial Lecturer J. I. Robertson, Jr.
Assistant Professors C. J. Herber, P. P. Hill, R. W. Kenny, Michael Gasster

FIRST GROUP

39–40 *The Development of European Civilization* (3–3) — Kayser, Herber, Kenny

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present. (Academic year—day and evening; summer 1963.)

71–72 *The Development of the Civilization of the United States* (3–3) — Haskett, Hill

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present. (Academic year—day and evening; summer 1963.)

* On leave of absence 1963–64.

SECOND GROUP*

105–6 *Introduction to the History of Science* (3–3) Multhauf
First half: the ancient natural philosophy and the growth of special sciences through the 17th-18th century scientific revolution. *Second half:* the main lines of development of astronomy, physics, chemistry, biology, and medicine from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39–40 or a background in science. (Academic year—evening.)

109–10 *Ancient History* (3–3) Kayser
The political, social, and intellectual aspects will be considered. *First half:* the ancient Near East and Greece. *Second half:* Rome. (Not offered 1963–64.)

111–12 *Medieval History* (3–3) Kayser
The political, social, and intellectual aspects will be considered. *First half:* from the 4th to the 12th century. *Second half:* from the 13th through the 16th century. (Academic year—day.)

130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. (Summer 1963.)

131–32 *History of Germany* (3–3) Herber
The political, social, and cultural development of the German people. *First half:* from the Reformation to 1871. *Second half:* from 1871 to the present. (Not offered 1963–64.)

141–42 *History of France* (3–3) Herber
A survey of the political, social, and cultural history of France. *First half:* from earliest times to 1815. *Second half:* from 1815 to the present. (Academic year—day.)

145–46 *History of Russia* (3–3) Thompson
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860–1881. *Second half:* Revolution and Soviet rule, 1881–1960. (Academic year—evening; summer 1963.)

147 *Economic History of Europe* (3) Sharkey
A survey from ancient times to the present day. (Not offered 1963–64.)

148 *Oversea Expansion of Europe* (3)
International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the 19th and 20th centuries. (Not offered 1963–64.)

149–50 *European Diplomatic History* (3–3) Davison
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878. (*First half:* 1963–64 and alternate years; fall—day. *Second half:* spring—day and evening.)

151–52 *English History* (3–3) Kenny
A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half:* to 1689. *Second half:* since 1689. (Academic year—day and evening; summer 1963—History 152 (3).)

161 *Ancient Americans* (3) Davis
A study of the Maya, Aztec, Inca, and other early civilizations of North and South America. (1964–65 and alternate years.)

162 *Iberian Background of Latin America* (3) Davis
History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires. (1964–65 and alternate years.)

* History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 170 through 184; either History 39–40 or 71–72, to courses 161 through 166.

163 *Colonial Latin America* (3)
Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence. (Fall—day.)

164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. (Alternate spring and summer terms: summer 1964; spring 1965.)

166 *Mexico and the Caribbean since Independence* (3)
A survey of the republics of Mexico, Central America, and the Caribbean islands. (Alternate spring and summer terms: spring—day; summer 1963.)

170 *American Colonial History* (3) Haskett
The settlement of the British colonies, the development of provincial institutions, and the emergence of an American civilization in the 17th and 18th centuries. (Spring—evening.)

171–72 *Social History of the United States* (3–3) Gray
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time. (Academic year—day; summer 1963—History 171 (3).)

173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. (Spring—evening; summer 1963.)

174 *Economic History of the United States* (3) Sharkey
Main trends in the development of American agriculture, industry, and trade since 1607, with their Old World backgrounds and in their world setting. (Fall—day.)

175–76 *Political and Constitutional History of the United States* (3–3) Haskett
First half: to the eve of the Civil War. *Second half:* the Civil War to 1940. (Academic year—day; summer 1963—History 176 (3).)

177 *The South* (3) Robertson
Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South. (Spring—day.)

178 *The West* (3)
The role of the frontier in American history. (Not offered 1963–64.)

179 *The Civil War* (3) Robertson
A survey of the causative factors leading to Civil War and of the social, political, military, economic, and diplomatic aspects of the War itself; the immediate and long-range effects of the War on American life. (Fall—day.)

181–82 *Diplomatic History of the United States* (3–3) Merriman Hill
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898. (Academic year—day and evening; summer 1963—History 182 (3).)

183 *Oversea Expansion of the United States* (3) Merriman
The political, economic, social, and cultural life of our outlying possessions. (Spring—day.)

184 *Canada and the United States* (3) Merriman
The historical background and main trends in the relationship of the two English-speaking peoples of North America. (Fall—day.)

187 *History of Modern China* (3) Gasster
Principally since 1800. Traditional system, impact of the West, rebellion and reform, political and intellectual revolutions of the 20th century. (Fall—day.)

190 *History of India* (3) Thompson
The civilization of India and her neighbors from the beginnings to independence. (Not offered 1963–64.)

191–92 *Current History* (1–1)
Contemporary events in their world setting. (Not offered 1963–64.)

193 *History of the Near East* (3) Davison
The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states. (1964–65 and alternate years.)

195–96 *History of the Far East* (3–3) Thompson
First half: the civilization of China and Japan from the beginnings to 1600. *Second half:* the modern Far East under the impact of the West since 1600. (Academic year—day and evening.)

197–98 *Proseminar in Latin American Civilization* (3–3) Davis, Robb, Sammons
Reading course for coordination and review. Open only to majors in Latin American Civilization. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the History Major* (3–3) Thompson, Gray
Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, in its world setting, including representative selections from the classics of historical literature. (Academic year—evening.)

THIRD GROUP*

211–12 *Reading Course in Medieval History* (3–3) Herber
Primarily for graduate students. (Not offered 1963–64.)

241–42 *Seminar in Modern European History* (3–3) Davison
(Academic year—evening.)

243 *Reading Course in Modern European History* (3) Thompson
For graduate students. (Fall—day.)

245–46 *Seminar in Eurasian History* (3–3) Thompson
(*First half:* not offered 1963–64. *Second half:* spring—day.)

247–48 *Reading Course in Russian History* (3–3) Davison
For graduate students. (Academic year—day.)

249 *Seminar in European Diplomatic History* (3) Kenny
(Spring—day.)

251–52 *Seminar in English History* (3–3) Davis
(Academic year—evening.)

261–62 *Seminar in Latin American History* (3–3) Gray
(*First half:* summer 1963. *Second half:* not offered 1963–64.)

271–72 *Seminar in the Social History of the United States* (3–3) Gray
(Academic year—day.)

273–74 *Reading Course in American Economic and Social History* (3–3) Haskett
For graduate students. (Academic year—evening.)

275–76 *Seminar in American Political and Constitutional History* (3–3)
(Academic year—evening.)

* Approval of the instructor is required for registration in each third-group course.

277–78 *Reading Course in American Political and Constitutional History* (3–3) Haskett
For graduate students. (*First half:* 1964–65 and alternate years; fall—day. *Second half:* 1963–64 and alternate years; fall—day.)

279–80 *Reading Courses in Economic History* (3–3) Sharkey
(Academic year—evening.)

281–82 *Seminar in the Diplomatic History of the United States* (3–3) Merriman
(Academic year—day.)

285–86 *Reading Course in American Diplomatic History* (3–3) Merriman
For graduate students. (Academic year—evening.)

287 *Seminar: Background of the Chinese Revolution** (3) (JAU)
The breakdown of traditional Chinese society; failure of attempts at modernization within the framework of the old system; spread of new ideas from Europe, Japan, and the United States. Controversy between different schools, e.g., constitutional monarchy and republicanism; Sun Yat-sen's organization of the Kuomintang; failure of parliamentary government after 1911; the intellectual ferment at Pei-ta and the May 4 movement; origins of the Chinese Communist Party. To be offered at the downtown campus of American University, as course number 75,668.) (Fall—evening.)

291–92 *Seminar* (3–3) The Staff
Prerequisite: approval of the Department. (Academic year—as arranged; summer 1963—History 291 (3).)

294 *Seminar in the History of the Modern Near East* (3) Davison
(Fall—evening.)

295 *Seminar in the History of the Modern Far East* (3) Gasster
(Fall—day.)

299–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree specializing in history. (Academic year—as arranged; summer 1963.)

HOME ECONOMICS

Professor Kathryn Towne *(Chairman)*
Associate Professorial Lecturer Mary Osterndorf

FIRST GROUP

1 *Food Selection and Preparation* (3)
Composition, selection, and preparation of food; analysis of recipes; standard products; planning, preparing, serving, and estimating the cost of meals. Material fee, $18. (Not offered 1963–64.)

2 *Clothing: Its Selection, Cost, and Care* (3) Towne
Clothing selections—the economic, aesthetic, and hygienic aspects; the application of the principles of color and design to individual selection; the care of clothing. (Not offered 1963–64.)

* Offered jointly by The George Washington University and American University. Classes offered at GWU will be designated "JGW", courses offered at AU will be designated "JAU". GWU students register at this University.

Osterndorf

51 *Family Meals* (3)
The choice, purchase, preparation, and service of foods; dietary standards, food habits, and the nutritional needs of the family; problems of purchasing, care, and use of food by the consumer. Material fee, $11. (Not offered 1963–64.)

Towne

53 *Family Health and Household Sanitation* (3)
Home hygiene and home care of the sick; the principles of household sanitation in relation to health and diseases. (Not offered 1963–64.)

Towne

62 *Clothing Construction* (3)
Simplified techniques and unit method of construction suitable for cotton, wool, silk, and man-made fibers; the use of commercial patterns and their alteration; the proper selection of color, design, and fabric. Material fee, $8. (Not offered 1963–64.)

Towne

66 *Fabric Decoration* (3)
Lecture (1 hour), laboratory (4 hours). Original pattern and color combinations; application to a variety of hand methods of decorating fabrics for use as clothing, draperies, and upholstering; use of stencils, block and screen printing, and other simple equipment. (Not offered 1963–64.)

Towne

71 *Costume Design and Fashion Economics* (3)
Factors determining fashions and effect on cost of clothing, problems of the consumer of textiles and clothing, historic costume and its relation to modern dress. Material fee, $8. (Not offered 1963–64.)

Towne

72 *Household Textiles* (3)
Properties, uses, and tests of the different textile fibers and fabrics, and development of judgment and knowledge of standard for the consumer of clothing and house-furnishing material. Material fee, $8. (Fall—day.)

77 *Marketing* (3)
Purchasing of foods as it relates to the home and to the institution. (Not offered 1963–64.)

SECOND GROUP

Osterndorf

102 *Advanced Food Preparation* (3)
The application of the fundamental processes of food preparation to a wider range of food materials and various services for different occasions. Material fee, $18. (Not offered 1963–64.)

106 *Quantity Cookery* (3)
(Not offered 1963–64.)

Towne

123 *Household Finance and Problems of the Consumer* (3)
Economic problems of the family in modern industrial society, family income, income apportionment and household expenditures, laws affecting the home, investments, consumer buying. (Spring—day.)

Towne

143 *Advanced Clothing Construction* (3)
Problems of clothing construction and flat pattern designing. Material fee, $8. (Not offered 1963–64.)

148 *Food Problems and Demonstration Methods* (3)
Factors affecting the preparation of standard products from the experimental viewpoint, principles of demonstration. Material fee, $18. (Fall—day.)

152 *Nutrition* (3)
Lecture course on the principles of normal and abnormal human nutrition. Laboratory work on the calculation and preparation of dietaries. Laboratory fee, $8. (Fall—day.)

154 *Diet Therapy* (3)
Study of nutrition as applied to diet and disease. Material fee, $9. (Not offered 1963–64.)

164 *Child Nutrition* (3) Osterndorf
Basic principles and practices in nutrition at infant, pre-school, and adolescent ages. Demonstration of nutritional and special food requirements. (Not offered 1963–64.)

168 *Institutional Management* (3)
Study of the organization, equipment, and marketing problems of institutions. (Not offered 1963–64.)

171 *House Furnishing* (3) Towne
Home planning from the historic, artistic, economic, and sanitary viewpoints; home furnishings such as linens, dishes, floor covering, mattresses, etc. Material fee, $5. (Not offered 1963–64.)

172 *Problems in Home Furnishings* (3) Towne
Lecture (1 hour), laboratory (4 hours). Workshop-type course in home furnishings, including upholstering, slip covering, refinishing furniture, and making draperies. (Not offered 1963–64.)

181 *The Child in the Home* (3)
Care and development of children, parent-child relationships. (Spring—day.)

192 *The Home, Its Management and Equipment* (3) Towne
Economic management of the home; distribution of time and energy; problems in the selection, arrangement, and care of equipment. (Not offered 1963–64.)

193 *Supervision of Home Management* (3) The Staff
Field work under supervision. Designed to meet requirements of those preparing to teach in federally aided schools. (As arranged.)

195–96 *Special Problems* (3–3) The Staff
Individual investigation or study under the guidance of a member of the Staff. (Academic year—day.)

197–98 *Proseminar* (3–3) The Staff
The study of the most recent materials and problems in the various phases of home economics. (Academic year—day.)

INTERNATIONAL AFFAIRS

A. M. Woodruff, *Acting Chairman*

Professors J. W. Brewer, H. M. Merriman, R. H. Davison, W. H. Kraus, W. C. Davis, R. B. Thompson, W. E. Schmidt, C. E. Galbreath, W. E. Tayler, K. L. London, J. L. B. Atkinson, H. M. Stout, Franz Michael *(Visiting)*
Professorial Lecturers R. L. Garthoff, Hans Heymann, H. C. Hinton, Lothar Metzl, V. P. Petrov, T. W. Wolfe, J. J. Karch
Associate Professors Benjamin Nimer, J. N. Mosél, H. R. Ludden, R. S. Jordan, George Stambuk
Assistant Professor J. K. McDonald
Lecturers Bernard Ramundo, C. H. Slayman

The following courses are offered by the departments of Economics, Geography and Regional Science, History, Political Science, Psychology, and Sociology and

Anthropology. For course descriptions see the departmental announcements concerned. The courses are listed here as an indication of the range of elective courses available to students of International Affairs at The George Washington University. Other courses may be approved as electives in individual student programs.

General

Anthropology 161, *Language and Culture* (3)
Anthropology 263, *Culture, Contact, and Change* (3)
Economics 181–82, *International Economics* (3–3)
Economics 246, *Foreign Labor Movements* (3)
Economics 281–82, *International Economics* (3–3)
Economics 284, *United States Foreign Economic Policy* (3)
Economics 290, *Seminar in International Economics* (3)
Geography 52, *World Regions* (3)
Geography 126, *World Economies* (3)
Geography 127, *World Population and Settlement* (3)
Geography 145, *World Cultural Geography* (3)
Geography 146, *World Political Geography* (3)
Geography 211–12, *Reading Course in Economic Geography* (3–3)
Geography 241–42, *Seminar: Place and Culture* (3–3)
Geography 251–52, *Seminar: World Problem Areas* (3–3)
History 181–82, *Diplomatic History of the United States* (3–3)
History 183, *Oversea Expansion of the United States* (3)
History 184, *Canada and the United States* (3)
History 281–82, *Seminar in the Diplomatic History of the United States* (3–3)
History 285–86, *Reading Course in American Diplomatic History* (3–3)
Political Science 111, *Introduction to Comparative Government and Politics* (3)
Political Science 112, *Introduction to Comparative Government and Politics* (3)
Political Science 117–18, *Political Theory: the Nature and Growth of Political Thought in the West* (3–3)
Political Science 171, *International Politics* (3)
Political Science 172, *International Organization: the United Nations* (3)
Political Science 181–82, *International Law* (3–3)
Political Science 187–88, *Current Problems in International Politics* (1–1)
Political Science 197, *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3)
Political Science 212, *Seminar: Comparative Government and Politics* (3)
Political Science 213, *Readings in Comparative Government and Politics* (3)
Political Science 217, *Seminar: Topics in Political Theory* (3)
Political Science 220, *Reading Course in Political Theory* (3)
*Political Science 261, *International and United States Foreign Policy* (3)

* Offered in off-campus War College programs only.

Political Science 271–72, *Problems in International Politics and Organization* (3–3)
Political Science 273, *Public Opinion and Foreign Policy* (3)
Political Science 274, *Methods and Objectives of Foreign Policy* (3)
Political Science 279, *Reading Course in International Affairs* (3)
Political Science 281–82, *Seminar: International Law and Relations* (3–3)
*Political Science 283, *Topics in International Law* (3)
*Political Science 285, *Diplomacy Since World War II* (3)
Psychology 156, *Psychology of Propaganda and Public Opinion* (3)
Sociology 144, *Mass Communications* (3)
Sociology 226, *Problems of Underdeveloped Areas* (3)
Sociology 241, *Population Problems* (3)

Africa

Geography 155, *Africa* (3)
Political Science 192, *Politics of North and Central Africa* (3)

Far East

Geography 165, *Eastern and Southeastern Asia* (3)
Geography 167, *The Pacific* (3)
Geography 168, *Australia* (3)
History 187, *History of Modern China* (3)
History 190, *History of India* (3)
History 195–96, *History of the Far East* (3–3)
Political Science 194, *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Political Science 293–94, *Seminar: International Politics and Government in the Pacific Area* (3–3)

Latin America

Economics 185–86, *Economic History and Problems of Latin America* (3–3)
Economics 285–86, *Economic Development of Latin America* (3–3)
Economics 287–88, *Latin America: Trade and Commodity Policy* (3–3)
Geography 161, *Latin America* (3)
History 163, *Colonial Latin America* (3)
History 164, *South America since Independence* (3)
History 166, *Mexico and the Caribbean since Independence* (3)
History 261–62, *Seminar in Latin American History* (3–3)
Political Science 177, *Recent Trends in Latin American Politics and Government* (3)
Political Science 277, *Seminar: Latin American Government* (3)
Political Science 278, *Seminar: Latin American Political Philosophy* (3)

* Offered in off-campus War College programs only.

Middle East

Geography 156, *The Middle East* (3)
History 193, *History of the Near East* (3)
History 294, *Seminar in the History of the Modern Near East* (3)
Political Science 191, *Politics of the Middle East* (3)
Political Science 292, *International Politics and Government in the Middle East* (3)

Sino-Soviet

Economics 133, *The Economy of the Soviet Union* (3)
Economics 267, *The Soviet Economy* (3)
Geography 164, *Communist China* (3)
Geography 166, *The Soviet Union* (3)
Geography 266, *Seminar: the Sino-Soviet Area* (3)
History 145–46, *History of Russia* (3–3)
History 245–46, *Seminar in Eurasian History* (3–3)
History 287, *Seminar: Background of the Chinese Revolution*• (3)
History 295, *Seminar in the History of the Modern Far East* (3)
Political Science 215–16, *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3)
Political Science 220, *Seminar: Reading Course in Political Theory—the Political Thought of Socialism and Communism* (3)
Political Science 227, *Seminar: the East European Satellites* (3)
Political Science 229, *Seminar: Ideological Aspects of Chinese Communism*• (3)
Political Science 230, *Seminar: Operational Techniques of International Communism* (3)
Political Science 238, *Seminar: Legal Order in the USSR—a Survey of Soviet Law* (3)
Political Science 239, *Seminar: Communist Chinese Constitutional Law* (3)
Political Science 263, *Seminar: Communist China's Role in the Communist Movement* (3)
Political Science 265, *Seminar: Communist Chinese Foreign Policy and Strategy* (3)
Political Science 267, *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)
Political Science 269, *Seminar: Soviet Foreign Policy* (3)
Political Science 270, *Seminar: Problems of Soviet Political Strategy—Case Studies* (3)
Political Science 288, *Seminar: Communist Military Policy and Strategy* (3)
Political Science 296, *Seminar: the Communist Bloc in Far Eastern International Politics* (3)
Psychology 259, *Seminar: Social Psychology of Communism* (3)

• Offered jointly by The George Washington University and American University.

Western Europe

Geography 153, *Western Europe* (3)
Geography 154, *The Mediterranean* (3)
History 141–42, *History of France* (3–3)
History 148, *Oversea Expansion of Europe* (3)
History 149–50, *European Diplomatic History* (3–3)
History 241–42, *Seminar in Modern European History* (3–3)
History 249, *Seminar in European Diplomatic History* (3)
Political Science 113, *Political Problems of the British Commonwealth of Nations* (3)
Political Science 178, *International Politics in the Western Hemisphere* (3)

JOURNALISM

Professor R. P. Schlabach, Jr. *(Chairman)*
Professorial Lecturer H. L. Coppenbarger
Associate Professor R. C. Willson
Lecturers F. L. Dennis, J. V. Hinkel, Louis Robinson, T. R. Smith, D. W. Gottlieb

FIRST GROUP

71–72 *Journalism in American Society* (3–3) Schlabach, Willson
Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; problems of contemporary journalism. (Academic year—day and evening.)

SECOND GROUP

111 *Reporting* (3) Coppenbarger, Schlabach
Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered. (Fall—day; spring—evening; summer 1963.)

115 *Editing and Make-up* (3) Schlabach
Editing of news and other material for publication, typography and display; use of pictures and other graphic presentations. (Fall—day; summer 1963.)

121 *Advanced Reporting: Magazine Feature Articles* (3) Willson
Instruction and practice in writing magazine articles, material for which is obtained through independent investigation. (Fall—evening.)

133 *Advanced Reporting: Community News* (3) Gottlieb
Instruction and practice in coverage and writing of local news. (Fall—evening.)

137 *Advanced Reporting: National Affairs* (3) Schlabach
Instruction and practice in coverage and writing of federal government news from the point of view of the press association. (Spring—day.)

Smith

140 *Pictorial Journalism* (3)
Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing technique, cropping for effective reproduction. (Spring—evening.)

142 *Retail Newspaper Advertising* (3)
Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods. (Not offered 1963–64.)

Willson

143 *Industrial Communications* (3)
An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications, and external house organs. (Spring—day.)

144 *Advanced Reporting: the Arts and Sciences* (3)
Instruction and practice in writing articles for publication in such fields as the arts, business and economics, science, and technology. (Not offered 1963–64.)

Hinkel

145 *Principles and Problems of Public Relations* (3)
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—Saturday morning.)

151 *Editorial Writing* (3)
Instruction and practice in writing of editorials on public affairs. (Not offered 1963–64.)

Schlabach

196 *Seminar* (3)
For Journalism majors only. Research in areas relating journalism to secondary fields of study. (Spring—as arranged.)

Dennis

198 *Law of the Press* (3)
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—Saturday morning.)

COURSE OFFERED IN SIX-WEEK EDUCATION SESSION

Carter

190 *Supervising School Publications* (3)
The role of journalism in society and the secondary school. Basic news writing, copy editing, make-up and law of the press. Editorial, business, and mechanical aspects of scholastic newspaper, magazine, and yearbook publication. (Summer 1963.)

LINGUISTICS—GRADUATE STUDY

COMMITTEE ON LINGUISTIC STUDY

J. G. Allee, Jr. *(Chairman)*, W. G. Clubb, P. F. Gallagher, J. C. King, G. E. McSpadden, N. D. Nelson

The following courses in the area of Linguistics are offered by the departments of Columbian College of Arts and Sciences.

ENGLISH

125 *Introduction to English Linguistics* (3) — Allee
223–24 *Old English* (3–3) — Allee

GERMANIC LANGUAGES AND LITERATURES

201–2 *Middle High German* (3–3) — Legner
205–6 *Gothic* (3–3) — Legner
209–10 *Old High German* (3–3) — King
213–14 *Old Norse* (3–3) — Allee
223–24 *Linguistic Analysis of Modern German* (3–3) — King
225–26 *Seminar: Linguistics* (3–3) — King, Allee
227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3) — King

MATHEMATICS

101 *Introduction to Mathematical Logic* (3) — Nelson
201–2 *Mathematical Logic* (3–3) — Nelson

PSYCHOLOGY

115 *Psychology of Language and Communication* (3) — Mosél

ROMANCE LANGUAGES AND LITERATURES

FRENCH

203 *Problems of Pronunciation and Intonation* (3–3) — Vignéras
212 *Historical French Grammar* (3) — Vignéras
213–14 *Old French* (3–3) — Vignéras

SPANISH

203 *Problems of Pronunciation and Intonation* (3) — McSpadden
212 *Historical Spanish Grammar* (3) — McSpadden
214 *Old Spanish* (3) — McSpadden

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) — McSpadden
279 *Introduction to Romance Philology and Linguistics* (3) — McSpadden

SOCIOLOGY AND ANTHROPOLOGY

ANTHROPOLOGY

161 *Language and Culture* (3) — Gallagher
193 *Anthropological Methods* (3) — Campbell

MATHEMATICS

Professors F. E. Johnston, Florence Mears, N. D. Nelson* *(Chairman)*, T. P. G. Liverman, N. A. Wiegmann
Professorial Lecturers W. H. Marlow, D. M. Dribin, Thomas Saaty
Associate Professors W. A. Smith, Hewitt Kenyon
Associate Professorial Lecturers Joseph Blum, P. A. DeVore
Assistant Professor R. Z. Vause
Lecturers Mabel Morris, A. J. Ziffer

FIRST GROUP†

3 *College Algebra* (3) The Staff
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1963.)

6 *Plane Trigonometry* (3) The Staff
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1963.)

9 *General Mathematics I* (3) The Staff
For those students in the School of Education or others electing Mathematics 9 and 10 as a terminal sequence in mathematics. Propositional logic and truth values; the number system, number bases, arithmetical computation; algebraic functions; topics from plane geometry. Prerequisite: two years of high school mathematics. Not open to students who have had former Mathematics 2. (Fall and spring—day and evening; summer 1963.)

10 *General Mathematics II* (3) The Staff
An introduction to matrices and vector spaces; non-Euclidean geometry; introduction to concepts of the calculus. Prerequisite: Mathematics 9 or former 2. (Fall—evening; spring—day and evening; summer 1963.)

15 *Finite Mathematics I* (3) The Staff
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics. (Fall—day and evening.)

16 *Finite Mathematics II* (3) The Staff
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—day and evening.)

21 *Calculus I* (3) The Staff
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent. (Fall and spring—day and evening; summer 1963.)

* On sabbatical leave spring semester 1963-64.
† No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

22 *Calculus II* (3) — The Staff
Differentiation and integration of transcendental functions and applications, conics, parametric equations, techniques of integration. Prerequisite: Mathematics 21. (Fall and spring—day and evening; summer 1963.)

23 *Calculus III* (3) — The Staff
Vector concepts, improper integrals, solid geometry, partial differentiation and applications. Prerequisite: Mathematics 22. (Fall and spring—day and evening; summer 1963.)

24 *Calculus IV* (3) — The Staff
Multiple integration with application, infinite series, differential equations. Prerequisite: Mathematics 23. (Fall and spring—day and evening; summer 1963.)

27 *Calculus I and II* (6) — The Staff
The equivalent of Mathematics 21 and 22. (Fall—day.)

28 *Calculus III and IV* (6) — The Staff
The equivalent of Mathematics 23 and 24. (Spring—day.)

SECOND GROUP*

101 *Introduction to Mathematical Logic* (3) — Nelson
Development of propositional and predicate calculi, basic semantic concepts, elementary intuitive set theory, Boolean algebra. Prerequisite: Mathematics 24 or former 31, or Philosophy 121. (Fall—evening.)

102 *Fundamental Concepts of Mathematics* (3) — Nelson
Axiomatic set theory, cardinal and ordinal arithmetic, foundations of the real number system. Prerequisite: Mathematics 101 or permission of the instructor. (Not offered 1963–64.)

106 *Introduction to Topology* (3) — Kenyon
(Spring—evening.)

111 *Mathematics for Engineers and Physicists I* (3) — The Staff
Differential equations, vector analysis, introduction to matrix algebra. (Fall and spring—day and evening; summer 1963.)

112 *Mathematics for Engineers and Physicists II* (3) — The Staff
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or former 132. (Fall and spring—day and evening; summer 1963.)

120 *Introduction to Theory of Numbers* (3) — Vause
(Fall—evening.)

122 *Introduction to Abstract Algebra* (3) — The Staff
(Fall—day; spring—evening.)

124 *Introduction to Matrix Theory* (3) — The Staff
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—evening; spring—day; summer 1963.)

126 *Advanced Analytic Geometry* (3)
(Not offered 1963–64.)

134 *Introduction to Boundary Value Problems* (3) — The Staff
Prerequisite: Mathematics 111, or former 132, or 142. (Spring—evening.)

135 *Projective Geometry* (3) — The Staff
(Fall—evening.)

* Mathematics 24 or former 31 is prerequisite to all second-group courses.

139 *Advanced Calculus I* (3) — The Staff
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings. (Fall—evening; spring—day; summer 1963.)

140 *Advanced Calculus II* (3) — The Staff
Vector fields, multiple integrals, line and surface integrals, point set theory, theory of integration, improper integrals. Prerequisite: Mathematics 139. (Spring—evening.)

141 *Introduction to Infinite Series* (3) — Mears
(Not offered 1963–64.)

142 *Theory of Differential Equations* (3) — The Staff
Prerequisite: Mathematics 139. (Fall—evening.)

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 111 or former 132. (Not offered 1963–64.)

171 *Vector Analysis* (3) — The Staff
(Spring—evening.)

THIRD GROUP

201–2 *Mathematical Logic* (3–3) — Nelson
(*First half:* fall—evening. *Second half:* not offered 1963–64.)

220 *Theory of Numbers* (3) — Vause
(Spring—evening.)

237–38 *Theory of Functions of a Complex Variable* (3–3) — Johnston
A year course: credit is not given for the first half until the second half is completed. (Academic year—evening.)

242 *Infinite Series* (3) — Mears
(Not offered 1963–64.)

243–44 *Numerical Analysis* (3–3) — Marlow
Prerequisite: Mathematics 111, former 132, or 142. (Academic year—evening.)

249 *Ordinary Differential Equations* (3)
(1964–65 and alternate years.)

250 *Integral Equations* (3) — Liverman
(Not offered 1963–64.)

251–52 *Theory of Functions of a Real Variable* (3–3) — Dribin
(1964–65 and alternate years.)

255 *Differential Geometry* (3) — Dribin
(Summer 1963.)

256 *Introduction to Algebraic Geometry* (3) — Johnston
(Spring—evening.)

257 *Theory of Groups* (3) — Liverman
(Not offered 1963–64.)

261 *Generalized Functions and Operational Methods* (3)
Theory of generalized functions in one variable. Operational calculus of generalized functions. Applications to differential equations and Fourier analysis. Prerequisite: Mathematics 140. (1963–64 and alternate years: fall—evening.)

262 *Advanced Operational Methods* (3) — Liverman
Generalized functions on test spaces of analytic functions. Operational calculus in several variables. Applications to partial differential and convolution equations of applied mathematics. Prerequisite: Mathematics 261. (1963–64 and alternate years: spring—evening.)

265–66 *Modern Algebra* (3–3) Wiegmann
Fundamental concepts of theory of groups, rings, and fields. Theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains, and groups with operators. (1964–65 and alternate years.)

267 *Topics in Matrix Theory* (3) Wiegmann
Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 124 and an elementary knowledge of groups, rings, and fields. (Spring—evening.)

268 *Calculus of Variations* (3)
(Not offered 1963–64.)

270 *Tensor Analysis* (3)
(Fall—evening.)

272 *Hilbert Space* (3)
(1964–65 and alternate years.)

277 *Partial Differential Equations* (3)
(1964–65 and alternate years.)

281–82 *Topology* (3–3) Kenyon
(1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

MICROBIOLOGY

Professors A. M. Griffin, Mary Robbins, R. C. Parlett *(Chairman)*
Associate Professor Rudolph Hugh
Assistant Professors R. C. Wood, Elizabeth O'Hern, Lewis Affronti

112 *General Microbiology* (4) Parlett and Staff
For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $16. (Spring—MF 9–12 A.M.)

209 *Medical Microbiology** Parlett and Staff
For medical students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and disease of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. (Fall: lecture (4 hours), laboratory (10 hours)—as arranged.)

211 *Medical Bacteriology and Virology** (7) Parlett, Robbins
A study of the fundamentals of bacteriology and virology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

* The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

O'Hern

213 *Parasitology** (3)
A study of the fundamentals of parasitology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $5. (Fall—as arranged.)

Parlett

215 *Immunology** (1)
A study of the fundamentals of immunology with methods of laboratory study. Open to graduate students. Prerequisite: any biological laboratory science; Chemistry 151–52; permission of the instructor. Laboratory fee, $16. (Fall—as arranged.)

O'Hern

217 *Advanced Mycology* (3)
Advanced study of the fungi—emphasizing culturing and determinative techniques. Lectures and laboratory exercises. Prerequisite: Microbiology 112 or 209, and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: fall—as arranged.)

Hugh and Staff

219–20 *Advanced Microbiology* (arr.)
Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Microbiology 112 or 211, 213, and 215; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $16 a semester. (Academic year—as arranged.)

Wood

225 *Microbial Chemistry and Physiology* (3)
A lecture course. The biochemical features peculiar to various microorganisms—especially bacteria—are described and are compared with those of the animal cell. Includes discussion of the use of microorganisms in the elucidation of problems in biochemistry. Prerequisite: Biochemistry 221–22 or the equivalent. A course in general microbiology is recommended. (1963–64 and alternate years: fall—as arranged.)

Wood

227 *Microbial Pharmacology* (2)
A lecture course describing the interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Includes discussion of the selective action of drugs toward microbial and animal cells. Prerequisite: Microbiology 225 or permission of the instructor. (1964–65 and alternate years: fall—as arranged.)

Griffin

230 *Statistics and Microbiology* (3)
The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: elementary college algebra. (Spring—as arranged.)

Parlett, Affronti

232 *Immunological Methods* (3)
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1964–65 and alternate years: spring—as arranged.)

Robbins

234 *Virology* (6)
Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Microbiology 112 or 211, 213, and 215 and permission of the instructor. Laboratory fee, $16. (1963–64 and alternate years: spring—as arranged.)

The Staff

249–50 *Introduction to Medical Research*† (3–3)
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

The Staff

293–94 *Staff Seminar* (1–1)
For graduate students. Bi-weekly throughout the year. (Academic year—as arranged.)

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* The combination of Microbiology 211, 213, and 215, is equivalent to Microbiology 209 which is limited to medical students.

† An interdepartmental course. The student should register in the department directing his research.

295–96 *Research in Microbiology* (arr.) The Staff
(Academic year—as arranged.)

299–300 *Thesis* (3–3) The Staff

PATHOLOGY

Professors T. M. Peery *(Chairman)*, W. R. Duryee *(Research)*, F. N. Miller
Associate Professors William Newman, W. L. Marsh, M. O. Skelton *(Visiting)*
Assistant Professors Lois Platt *(Cytology)*, Alexander Breslow

115–16 *Introduction to Medical Science* (1–1) Marsh and Staff
For students in medical technology at the University Hospital. These lectures, based upon physiology, pathology, and medicine, provide a background for the interpretation of laboratory data. (Academic year—1 hour a week.)

117–18 *Principles in Medical Technology* (4–4) Marsh and Staff
For students in medical technology at the University Hospital. Theories, principles, and sources of error, of the methods used in clinical chemistry, clinical bacteriology, serology, hematology, and clinical microscopy. (Academic year—4 hours a week.)

119–20 *Medical Technology Laboratory* (10–10) Marsh and Staff
Practice and experience by rotation through the various divisions of the Pathology laboratories of the University Hospital, as follows: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 10 weeks; blood bank, 8 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (30 hours a week for 50 weeks.)

281 *Problems in Experimental Cellular Pathology* (1) Duryee
For nonmedical graduate students. Also for a limited number of specially qualified medical students on an elective basis. Cytological and biophysical aspects of cellular function in relation to normal and selected pathological conditions. (Fall—1 hour a week as arranged.)

PHARMACOLOGY

Professor H. G. Mandel* *(Chairman)*
Clinical Professor R. G. Smith
Associate Professor Clarke Davison
Assistant Professors V. H. Cohn, Jr., T. M. Farber, Paul Mazel, Melvin Reich *(Research)*, J. F. Henderson *(Research)*, Elizabeth Tidball *(Research)*, W. P. Weiss *(Research)*

249–50 *Introduction to Medical Research*† (3–3) Reich and Staff
Primarily for graduate students. A comprehensive introduction to the major medical research techniques—statistical, physical, chemical, electrical, and radioisotopic—as applied to biological materials in the medical sciences. Laboratory fee, $7.50 a semester. (Academic year—W 1–5 pm.)

* On sabbatical leave spring semester 1963–64.
† An interdepartmental course. The student should register in the department directing his research.

261 *Pharmacology* (7) Mandel and Staff
Lectures, laboratories, and recitations concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. (Fall—9 hours a week.)

267–68 *Pharmacological Research* (3–3) The Staff
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. (Academic year—as arranged.)

269–70 *Pharmacology Seminar* (1–1) Cohn and Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. (Academic year—2 hours a week.)

272 *Physiological Disposition of Drugs* (3) Cohn, Davison
A lecture and seminar course dealing with the fate of drugs in biological tissue. Discussion of absorption, distribution, chemical alteration, and excretion of drugs, and the physical, chemical, and biological factors affecting these processes. Prerequisite: Pharmacology 261. (1963–64 and alternate years: spring—as arranged.)

279–80 *Special Topics in Pharmacology* (arr.) The Staff
A lecture course dealing with select aspects of drug action. Prerequisite: Pharmacology 261. (Academic year—as arranged.)

281 *Physiological Techniques in Pharmacology* (3) Farber, Mazel, Tidball
A series of specially selected experiments with supplementary lectures designed to illustrate physiological techniques useful in obtaining information as to mechanism and site of action of pharmacological agents. Prerequisite or concurrent registration: Pharmacology 261. (1963–64 and alternate years: fall—as arranged.)

283 *Biochemical Techniques in Pharmacology* (3) Cohn, Henderson
A lecture and laboratory course designed to equip the student with the theory and practice of modern biochemical techniques applicable to the study of the metabolic fate and mechanism of action of drugs. Prerequisite or concurrent registration: Pharmacology 261. (1964–65 and alternate years: fall—as arranged.)

299–300 *Thesis* (3–3) The Staff
Required of Master of Arts and Master of Science candidates. (Academic year—as arranged.)

PHARMACY

Professor R. M. Leonard ***(Chairman)***
Associate Professors C. J. Kokoski, S. M. Schwartz, F. D. Cooper, G. G. Lu
Associate Professorial Lecturer S. K. Hamarneh
Assistant Professor G. G. Koustenis

Special Lecturers W. S. Apple, G. F. Archambault, Karl Bambach, W. P. Briggs, C. J. Carr, E. G. Feldmann, L. E. Kazin, M. L. Yakowitz

SECOND GROUP The Staff

101 *Introductory Pharmacy* (1)
(Formerly Pharmacy 100)
Lecture and field trips. Introduction to pharmacy through the study of professional areas in which pharmacists are employed. Field trips include visits to representative retail and hospital pharmacies, wholesale drug houses, and museums. (Fall—day.)

115 *Pharmaceutical Calculations* (3) Kokoski
(Formerly Pharmacy 125)
Systems of weights and measures and their application in the practice of pharmacy. (Fall—day.)

121–22 *General Pharmacy* (4-4) Kokoski, Cooper, Schwartz
Essential pharmaceutical processes; theory and manufacture of pharmacopeial and formulary galenical preparations; pharmaceutical usage of certain classes of substances and preparations. Laboratory fee: Pharmacy 121, $11; Pharmacy 122, $18. (*First half:* fall—lecture (3 hours), laboratory (3 hours)—day. *Second half:* spring—lecture (2 hours), laboratory (6 hours)—day.)

131 *Pharmacognosy* (3) Leonard
(Formerly Pharmacy 126)
Lecture (2 hours), laboratory (3 hours.) Practices and procedures for the production, preservation, protection, and evaluation of crude drugs; biosynthetic origin of drugs and pharmaceuticals, representative examples, and their value in pharmacy and medicine. Prerequisite: Biology 1–2*; Chemistry 151–52. Laboratory fee, $11. (Fall—day.)

132 *Pharmacognosy* (3) Leonard
(Formerly Pharmacy 127)
Antibiotics, immunologic agents, allergens, hormones, vitamins, and pesticides. Prerequisite or concurrent registration: Microbiology 112; Physiology 137. (Spring—day.)

141 *Inorganic Pharmaceutical Chemistry* (3) Schwartz
(Formerly Pharmacy 101)
Lecture (2 hours), laboratory (3 hours). A study of the occurrence, methods of preparation, properties, and uses of the important inorganic chemicals encountered in pharmacy and medicine. Prerequisite: Chemistry 21. Laboratory fee, $11. (Fall—day.)

143 *Organic Pharmaceutical Chemistry* (3) Schwartz
(Formerly Pharmacy 110)
A survey of important synthetic and naturally occurring medicinal agents in current use with emphasis on nomenclature, isolation or synthesis, properties, and structure-action relationship. Prerequisite: Chemistry 152. (Fall—day.)

144 *Organic Pharmaceutical Chemistry* (3) Schwartz
(Formerly Pharmacy 111)
Continuation of Pharmacy 143. Prerequisite: Pharmacy 143. (Spring—day.)

145 *Organic Pharmaceutical Chemistry* (1) Schwartz
(Formerly Pharmacy 113)
Laboratory (3 hours). Preparation of selected official organic drugs. Prerequisite: Pharmacy 143. Prerequisite or concurrent registration: Pharmacy 144. Laboratory fee, $11. (Fall and spring—day.)

146 *Physical Pharmacy* (4) Schwartz
(Formerly Pharmacy 112)
Lecture (3 hours), laboratory (3 hours). Physicochemical principles and laws as they apply to pharmaceutical systems and preparations. Prerequisite: Pharmacy 141 and 143; concurrent registration: Pharmacy 144. Laboratory fee, $11. (Spring—day.)

148 *Quantitative Pharmaceutical Analysis* (3) Schwartz
(Formerly Pharmacy 174)
Lecture (1 hour), laboratory (6 hours). Drug analysis. Prerequisite: Chemistry 22. Laboratory fee, $18. (Spring—day.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

151 *Pharmacy Accounting* (3) — Koustenis
(Formerly Pharmacy 107)
The financial records required in the operation of a pharmacy. (Fall—day.)

154 *Pharmacy Management* (3) — Koustenis
(Formerly Pharmacy 178)
Policies and operations relating to the management of pharmacy. (Spring—day.)

161 *First Aid* (1) — The Staff
(Formerly Pharmacy 109)
Standard course in first aid methods and practice. (Fall—day.)

165–66 *Pharmacology* (4–4) — Lu
Drugs acting on the autonomic, central, and somatic nervous systems; cardiovascular, hematopoietic, genitourinary, endocrine, and digestive systems; histamine and antihistiminics; anti-infective agents; miscellaneous drugs; and their major clinical indications or therapeutic uses. Prerequisite: Biology 2*; Physiology 137 and 160 or 170; Microbiology 112; Biochemistry 221–22. Pharmacy 166: laboratory fee, $18. (*First half:* fall—lecture (4 hours)—day. *Second half:* spring—lecture (3 hours), laboratory (4 hours)—day.)

167–68 *Advanced Pharmacology* (arr.) — Lu
Laboratory work in pharmacological technique. Prerequisite or concurrent registration: Pharmacy 165. Laboratory fee, $18 a semester. (Fall and spring—day.)

171 *History of Pharmacy* (3) — Hamarneh
(Formerly Pharmacy 115)
Historical development of the profession, including the literature, from ancient times to the present. (Fall—day.)

176 *Pharmaceutical Law* (3) — Frailey
The study of laws regulating the practice of pharmacy. (Spring—day.)

181 *Dispensing Pharmacy* (4) — Kokoski, Koustenis
(Formerly Pharmacy 102)
Lecture (2 hours), laboratory (6 hours). Compounding of typical prescriptions and a study of incompatibilities. Prerequisite: Pharmacy 122, 143, 144. Laboratory fee, $18. (Fall—day.)

182 *Dispensing Pharmacy* (4) — Kokoski, Koustenis
(Formerly Pharmacy 103)
Lecture (2 hours), laboratory (6 hours). Continuation of Pharmacy 181. Laboratory fee, $18. (Spring—day.)

184 *Special Problems in Pharmacy* (arr.) — Kokoski, Schwartz
Directed laboratory and library research on special problems in pharmacy and pharmaceutical chemistry. For selected undergraduate students. Prerequisite: Pharmacy 143 and 181. Fees to be arranged. (Fall and spring—as arranged.)

186 *Advanced Dispensing Pharmacy* (3) — Kokoski
(Formerly Pharmacy 172)
The study of special problems in dispensing pharmacy. Prerequisite: Pharmacy 182. Laboratory fee, $18. (Spring—day.)

188 *Survey of Pharmacy* (1) — Leonard and Staff
A symposium covering the various phases of pharmacy. (Spring—day.)

190 *Hospital Pharmacy* (1) — Cooper
Organization and functions of hospitals; organization and operation of a hospital pharmacy; professional and sickroom supplies. Prerequisite: Pharmacy 181. (Spring—day.)

* Offered by the Department of Zoology.

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper and Staff
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 181. (Fall and spring—as arranged; summer 1963.)

194 *Manufacturing Pharmacy* (3) Cooper and Staff
Lecture (1 hour), laboratory (6 hours). The manufacture of bulk pharmaceuticals in the University Hospital Pharmacy. (Fall and spring—as arranged.)

PHILOSOPHY

Professor C. E. Gauss *(Chairman)*
Associate Professor R. H. Schlagel
Associate Professorial Lecturer C. H. Pfuntner

FIRST GROUP

51–52 *Introduction to Philosophy* (3–3) The Staff
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought. (Academic year—day and evening; summer 1963—Philosophy 51 (3).)

SECOND GROUP

111–12 *History of Philosophy* (3–3) Pfuntner
The history of western philosophy from early Greece to Kant, seen as the development and modification of the Hellenic cultural pattern. (Academic year—day; summer 1963—Philosophy 111 (3).)

113 *History of Nineteenth and Twentieth Century Philosophy* (3) Pfuntner
European philosophy from the time of Kant. "Isms" and ideologies at the root of contemporary thought. (Fall—evening.)

121–22 *Logic and Scientific Method* (3–3) Pfuntner
First half: the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability. (Academic year—evening; summer 1963—Philosophy 121 (3).)

131 *Ethics* (3) Schlagel
A critical examination of traditional ethical theories from Plato to Ayer. Consideration of the theoretical problems of ethics: the meaning of "good", the nature of ethical judgment, the justification of ethical standards. The course aims at enabling the student to develop his own ethical view as a consequence of his greater understanding of moral phenomena. (Fall—day.)

142 *Philosophies Men Live by* (3) Schlagel
Critique of the tenets, methodologies, and presuppositions of current, vital philosophical orientations: Existentialism, Positivism, Pragmatic Naturalism, Theism, Linguistic

Analysis. A critique of reason and faith, and the nonrational aspects of man as guiding influences in life. (Spring—day). Schlagel

151 *The Philosophy of Science* (3)
Brief history of modern science; problems of the meaning of causality, the justification of induction, theories of probability; the nature of scientific explanation and the status of inferred entities; the nature of a mathematical system. Consideration of the philosophic import of certain scientific theories such as Einstein's theory of relativity, Heisenberg's principle of indeterminacy, and Bohr's principle of complementarity. (Fall—day.) Schlagel

152 *Epistemology* (3)
The meaning and criteria of truth; the meaning and cognitive significance of common sense, scientific, and religious propositions or beliefs. Study of problems related to perception, verification, universals, *a priori* and *a posteriori* knowledge, the concept of mind. (Spring—day.) Gauss

162 *Aesthetics* (3)
The nature of aesthetic experience, problems of appreciation and judgment in the arts, and of the theories and process of artistic creation. Emphasis on contemporary arts and criticism. (Spring—day.) Pfuntner

172 *American Philosophy* (3)
The philosophies of Peirce, Royce, James, Dewey, and Santayana as representative of American thought. (Spring—evening.) Gauss

180 *Philosophy of History* (3)
Problems of historical knowledge and explanation. Critique of philosophies of history. (Not offered 1963–64.) Gauss

193 *Topics in Contemporary Philosophy* (3)
Intensive study of one selected topic: topic for 1963–64: philosophy in contemporary literature. (Fall—day.) The Staff

199–200 *Proseminar: Readings for the Major* (3–3)
Conferences and group discussions in preparation for field-of-study major examination. (Academic year—as arranged.)

THIRD GROUP

201–2 *Readings and Research* (3–3) The Staff
Advanced readings and reports. Investigation of special problems. (Academic year—as arranged.)

211 *Seminar in Plato* (3) Gauss
Intensive study of Plato's later dialogues. (Not offered 1963–64.)

212 *Seminar in Aristotle* (3) Schlagel
Aristotle's logic, metaphysics, and philosophy of science. The development of Naturalism. (Spring—evening.)

216 *Seminar in Kant* (3) Schlagel
A study of one of Kant's Critiques. (Not offered 1963–64.)

262 *Seminar in Aesthetics* (3) Gauss
Intensive study in selected problems. (Fall—evening.) The Staff

299–300 *Thesis* (3–3)

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)

Mathematics 101, *Introduction to Mathematical Logic* (3)

PHYSICAL EDUCATION FOR MEN*

Professors W. H. Myers, J. H. Krupa *(Chairman)*, R. G. Hanken, V. J. DeAngelis
Associate Professorial Lecturer W. D. Thompson
Lecturer Pat Abernethy

Associates W. J. Reinhart, J. V. Camp

FIRST GROUP

1-2 *Freshman Physical Education* (1–1) — The Staff
Two periods of supervised activity a week. Physical Education fee†, $4.50 a semester. (Academic year—as arranged.)

11-12 *Sophomore Physical Education* (1–1) — The Staff
Two periods of supervised activity a week. Physical Education fee†, $4.50 a semester. (Academic year—as arranged.)

41 *Personal Health* (1) — Krupa
Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring—day.)

43-44 *Techniques of Physical Education Motor Activities* (2–2) — DeAngelis, Krupa
Fundamental skills, rules, and organization. Physical Education fee†, $4.50 a semester. (Academic year—day.)

45-46 *Teaching Individual and Dual Sports in Secondary Schools* (2–2) — Hanken, Krupa
Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee†, $4.50 a semester. (Academic year—day.)

47 *Introduction to Physical Education* (2) — Myers
An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Fall—day.)

48 *Introduction to Recreation* (2) — Hanken
The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. (Spring—day.)

50 *Human Anatomy* (3)
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1-2‡. (Fall—day.)

76 *Kinesiology* (3) — Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.
† The Physical Education fee is required for registration in one or more of the activity courses.
‡ An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2*. (Spring—day.)

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Burtner, Snodgrass
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. (Fall—day; spring—evening.)

103 *History and Principles of Physical Education* (3) Myers
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

105–6 *Adapted Physical Education and Physical Examinations* (3–3) Lawrence
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Academic year—day.)

107 *Teaching Recreational Dance* (1 to 2) Burtner, Criddle
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Physical Education fee†, $4.50. (Fall—day.)

109–10 *Leadership Organization in the Intramural Program* (2–2) DeAngelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. (Academic year—day.)

113–14 *Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) Hanken and Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee†, $4.50 a semester. (Academic year—day.)

115–16 *Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) DeAngelis, Hanken
Football, basketball, baseball, track and field. Physical Education fee†, $4.50 a semester. (Academic year—day.)

117 *Teaching Modern Dance* (1 to 2) Burtner
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee†, $4.50. (1964–65 and alternate years: fall—day.)

118 *Dance Production* (1 to 2) Burtner
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee†, $4.50. (1964–65 and alternate years: spring—day.)

121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2*. (Fall—evening.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

† The Physical Education fee is required for registration in one or more of the activity courses.

122 *Methods and Materials for Health Education* (3)
Methods and materials for teaching health. Prerequisite: Biology 1-2*). (Spring—evening.)

131 *Tests and Measurements in Physical Education* (3) Krupa
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

132 *Camp Leadership* (1 to 2) Snodgrass
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)

136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. (1963–64 and alternate years: spring—as arranged.)

138 *Organization and Administration of Physical Education* (3) Krupa
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—evening.)

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Abernethy
Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1963–64 and alternate years: academic year—evening.)

161 *Community Organization for Recreation* (3) Thompson
Resources, principles, and methods in organizing community recreation services. (1964–65 and alternate years: fall—evening.)

162 *Administration of Community Recreation Programs* (3) Thompson
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1964–65 and alternate years: spring—evening.)

PHYSICAL EDUCATION FOR WOMEN†

Professors Helen Lawrence, Elizabeth Burtner
Associate Professors Loretta Stallings‡, Lyndale George
Associate Professorial Lecturer W. D. Thompson
Assistant Professor Jeanne Snodgrass *(Acting Chairman)*
Lecturer Pat Abernethy
Instructors Donna Abbey, Kathleen Criddle, Nan Byrd
Associate Mabel McEwan

FIRST GROUP

102 *Freshman Physical Education* (1–1) The Staff
One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each semester.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

† The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

‡ On sabbatical leave 1963 64.

Fundamentals of physical education: study of the factors involved in the general maintenance of health, efficient use of the body, and fundamentals of movement. Activities: badminton, basketball, body mechanics, field hockey, recreational dance, golf, fencing, modern dance, skating, swimming, synchronized swimming, tennis, softball, lifesaving. Physical Education fee*, $4.50 a semester. (Academic year—day.)

11–12 *Sophomore Physical Education* (1–1) The Staff
Two periods a week chosen from the activities offered each semester as listed under Physical Education 1–2. Physical Education fee*, $4.50 a semester. (Academic year—day.)

43–44 *Techniques of Physical Education Motor Activities* The Staff
(2 to 3–2 to 3)
Fundamental skills, rules, and organization. Physical Education fee*, $4.50 a semester. (Academic year—as arranged.)

49 *Human Anatomy* (3)
The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2†. (Fall—day.)

50 *Kinesiology* (3) Lawrence
A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

51–52 *Teaching Physical Education Activities* (2 to 3–2 to 3) The Staff
Team sports: basketball, hockey, softball, soccer, speedball. Individual and dual sports: tennis, badminton, archery, swimming and diving, lifesaving and water safety. Gymnastics: tumbling, apparatus and trampoline. Physical Education fee*, $4.50 a semester. (1963–64 and alternate years: academic year—day.)

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis
Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2†. (Spring—day.)

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Burtner, Snodgrass
Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, self-testing activities, and body mechanics. (Fall—day; spring—evening.)

103 *History and Principles of Physical Education* (3) Myers
Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

105–6 *Adapted Physical Education and Physical Examinations* Lawrence
(3–3)
Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Academic year—day.)

107 *Teaching Recreational Dance* (1 to 2) Burtner, Criddle
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Physical Education fee*, $4.50. (Fall—day.)

* The Physical Education fee is required for registration in one or more of the activity groups.
† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

111–12 *Teaching Physical Education Activities* (2–2) The Staff
Continuation of methods and materials in activities listed under Physical Education 51–52. Physical Education fee*, $4.50 a semester. (1964–65 and alternate years: academic year—day.)

113–14 *Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) The Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee*, $4.50 a semester. (Academic year—as arranged.)

117 *Teaching Modern Dance* (1 to 2) Burtner
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee*, $4.50. (1964–65 and alternate years: fall—day.)

118 *Dance Production* (1 to 2) Burtner
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee*, $4.50. (1964–65 and alternate years: spring—day.)

121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2†. (Fall—evening.)

122 *Methods and Materials for Health Education* (3)
Methods and materials for teaching health. Prerequisite: Biology 1–2†. (Spring—evening.)

131 *Tests and Measurements in Physical Education* (3) Krupa
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

132 *Camp Leadership* (1 to 2) Snodgrass
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)

136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. (1963–64 and alternate years: spring—as arranged.)

138 *Organization and Administration of Physical Education* (3) George
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—as arranged.)

151–52 *Recreational Leadership Activities* (3–3) Abernethy
Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1963–64 and alternate years: academic year—evening.)

161 *Community Organization for Recreation* (3) Thompson
Resources, principles, and methods in organizing community recreation services. (1964–65 and alternate years: fall—evening.)

* The Physical Education fee is required for registration in one or more of the activity courses.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

162 *Administration of Community Recreation Programs* (3) Thompson
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1964–65 and alternate years: spring—evening.)

PHYSICS

Professors G. M. Koehl, Herbert Jehle
Associate Professors H. H. Hobbs *(Chairman)*, Otto Bergmann, A. J. Zuchelli
Associate Professorial Lecturers H. H. Landon, Jr., Herbert Rabin
Assistant Professors S. S. Yeandle, Jr., Margaret Montzka, S. P. Bjorklund
Lecturers J. N. Tevis, DeWitt Fisher, J. M. Harrison, K. F. Oerlein, W. J. Condell, Jr., J. E. Tompkins
Instructor R. M. Shirven

FIRST GROUP

For a one-year course offering an introduction to the methods and achievements of physical science, see Chemistry 3–4, page 40.

11 *Introductory Physics* (3) Koehl and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours.) An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introdution to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. (Fall and spring—day and evening; summer 1963.)

12 *Introductory Physics* (3) Koehl and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Material fee, $11. (Spring—day and evening; summer 1963.)

13 *Introductory Physics* (3) Harrison and Staff
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Elementary electricity and magnetism. Prerequisite: Physics 11. Material fee, $11. (Fall—day and evening; summer 1963.)

14 *General Physics* (3) Yeandle and Staff
Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Mechanics, wave motion, and sound. Prerequisite: Physics 11, Mathematics 21 (or former 29). Material fee, $11. (Spring—day and evening.)

15 *General Physics* (3) Bjorklund and Staff
Lecture (1 hour), recitation (1 hour), laboratory and conference (2½ hours). Electricity and magnetism. Prerequisite: Physics 14, Mathematics 22 (or former 30). Material fee, $11. (Fall—day and evening.)

16 *General Physics* (3) Hobbs
Lecture (2 hours), conference (1 hour). Modern physics, structure of the atom. Prerequisite: Physics 13 or 15, Mathematics 22 (or former 30) and consent of the instructor. (Spring—day and evening.)

SECOND GROUP

101 *Mechanics* (3) Jehle
Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 12 or 14, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—day; 1964–65 and alternate years: fall—evening.)

102 *Heat and Thermodynamics* (3) Yeandle
Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

105 *Principles of Electricity* (3)
Elementary d-c and a-c circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

106 *Optics* (3) Koehl
Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 16, Mathematics 24 (or former 31). (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day.)

113 *Atomic Physics* (3) Bergmann
Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 16, 101 or 105, or the equivalent, Mathematics 24 (or former 31). (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

114 *Statistical Physics* (3) Jehle
Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 16, Mathematics 24 (or former 31), permission of the instructor. (Spring—evening.)

116 *Quantum and Solid State Physics* (3) Hobbs
Primarily for engineers. Prerequisite: Physics 16, Mathematics 111. (Spring—day and evening.)

118 *Introduction to Solid State Physics* (3) Rabin
Dielectric and magnetic properties of solids, electron theory of metals, semi-conductors, dislocations, and plastic flow. Prerequisite: Physics 113. (Spring—evening.)

123 *Nuclear Physics* (3) The Staff
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. Prerequisite: Physics 113. (Spring—evening.)

128 *Sound* (3)
Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Not offered 1963–64.)

132 *Electronics* (3)
Lecture (2 hours), laboratory (3 hours). The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 16 and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11. (Not offered 1963–64.)

153 *Advanced Laboratory in Atomic Physics* (3) Hobbs
Prerequisite: Physics 16. Material fee, $11. (Spring: Saturday—as arranged.)

155 *Advanced Laboratory in Electricity and Magnetism* (3)
Prerequisite: Physics 105. Material fee, $11. (Not offered 1963–64.)

Hobbs

156 *Advanced Laboratory in Optics* (3)
Prerequisite: Physics 106. Material fee, $11. (Not offered 1963–64.)

Yeandle

181 *Biophysics* (3)
Molecular basis of biophysics, biosynthesis, and reproduction. Molecular and genetic aspects of the effects of radiation. Physiochemical equilibria, steady states, and transients in biological systems; order, disorder, and information theory. Admission by permission of the instructor. (Spring—evening.)

Landon

191 *Nuclear Reactors* (3)
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 16, Mathematics 24 (or former 31). (Fall—evening.)

THIRD GROUP

Bjorklund

201 *Classical Physical Theory* (3)
Classical nonrelativistic and relativistic field theories. Prerequisite: Physics 101 and 105; Mathematics 112, 171. (Mathematics 171 may be taken concurrently.) (Fall—evening.)

Bjorklund

202 *Classical Physical Theory* (3)
Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 112, 171. (Spring—evening.)

Bergmann

203–4 *Principles of Modern Physics* (3–3)
A critical survey of fundamental topics of modern physics including the theory of relativity, thermal radiation and quantum theory, atomic structure and spectra, wave mechanics, interactions present in multielectron atoms, X-ray, the nucleus, properties of matter in bulk. (Academic year—evening.)

Hobbs

218 *Solid State Physics* (3)
Tensor properties of crystals. Application of quantum mechanics to problems in solid state physics. (Spring—evening.)

Jehle

219–20 *Quantum Mechanics* (3–3)
Criticism of classical ideas of mechanics and a formulation of quantum mechanical equations; matrix mechanics and its relation to quantum mechanics; application to various problems of atomic, molecular, and nuclear physics. Prerequisite: Physics 113, 201, 202. (Academic year—evening.)

Jehle

221 *Quantum Electrodynamics and Field Theories* (3)
Variation principles. Relativistic wave equations, quantization of fields, interaction between fields. Scattering theory. S matrix and causality. Prerequisite: Physics 219–20. (1964–65 and alternate years.)

Jehle

222 *Elementary Particles* (3)
Scalar, vector, spinor fields, and elementary particles. Symmetry properties and associated conservation laws. Space inversion and parity, time reflection, charge conjugation. Prerequisite: Physics 219–20. (1963–64 and alternate years; spring—evening.)

Yeandle

227 *Irreversible Processes* (3)
Extension of thermodynamic concepts to irreversible processes. Discussion of thermodynamic forces and fluxes, and the Onsager reciprocal relations. Review of the statistical mechanical reasons for assuming the postulate of irreversible thermodynamics. Prerequisite: Physics 102, 114; Mathematics 112. (Spring—evening.)

Hobbs

255–56 *Graduate Laboratory* (4–4)
Individual work on special topics. One semester of this course is required of all Master's candidates in physics. Students electing this course may begin with Physics 255 or 256. Not open to undergraduates. Material fee, $11 a semester. (*First half:* fall—day. *Second half:* not offered 1963–64.)

291–92 *Seminar: Recent Developments in Physics* (1–1) The Staff
Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence. (Academic year: alternate weeks—Monday evening.)

299–300 *Thesis* (3–3) The Staff
Fees to be arranged. (Academic year—as arranged.)

PHYSIOLOGY

Professor C. E. Leese
Associate Professors F. P. J. Diecke, Ruth Henderson, C. S. Tidball *(Chairman)*
Assistant Professors Margret Westecker, Barbara Alving

115 *Introduction to Human Physiology* (3) Leese
Lectures on the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of biological science. (1963–64 and alternate years: fall—TTh 5:10–6:25 pm.; 1964–65 and alternate years: fall—TTh 8:45–10 am.)

190 *Psycho-Physiology* (2) Leese
Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. (Spring—TTh 5:10 pm.)

137 *Vertebrate Physiology* (4) Tidball and Staff
Fundamental principles of physiology as exemplified in the vertebrates. Prerequisite: Chemistry 11–12; Mathematics 3; and Physics 11, 12; or the equivalent. Laboratory fee, $18. (Fall—lecture, MWF 11:10–12 am.; laboratory, F 1:10–5 pm.)

150 *Medical Physiology* The Staff
Lecture and laboratory work in all divisions of physiology. This course is designed for medical students. (Spring—lecture 7 hours a week, laboratory 9 hours a week.)

170 *General Physiology* (3) Westecker
Lectures on basic topics in the physiology of cells and tissues. Prerequisite: Physiology 137 or 150, or Botany 135; and the consent of the Instructor. (Spring—T 11:10–12 am., Th 10:10–12 am.)

211–12 *Problems in Physiology* (arr.) The Staff
Directed study under the supervision of a staff member. Prerequisite: Physiology 137, 150, or 232, and the consent of the instructor. (Academic year—as arranged.)

221–22 *Physiology Seminar* (1–1) Henderson and Staff
Prerequisite: Physiology 137, 150, or 232, and a reading knowledge of French or German. (Academic year—as arranged.)

232 *Advanced Mammalian Physiology* (10) Diecke and Staff
Lecture 7 hours a week, laboratory 9 hours a week. Prerequisite: Chemistry 11–12; Mathematics 3; Physics 11, 12; or the equivalent. It is recommended that Biochemistry 221–22 be taken as a prerequisite or concurrently. (Spring—MWF 1–5 pm.; TTh 1–3 pm.)

Diecke

259 *Comparative Physiology* (2)
Lectures and seminars on topics of current interest in comparative physiology, with emphasis on nonmammalian forms. Prerequisite: Physiology 137, 150, 170, or 232, or Zoology 162; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

265 *Physiology of Cell Membranes* (2)
Lectures and seminars on ionic and molecular transport through biological membranes. Prerequisite: Chemistry 111–12 or Physics 181; *and* Physiology 150, 170, or 232, or Botany 135–36; and the consent of the instructor. (1964–65 and every third year: fall—as arranged.)

The Staff

281 *Biophysics* (2)
Lectures and seminars on biological topics which require development along physical lines. Prerequisite: Chemistry 111–12 or Physics 181 and the consent of the instructor. (1963–64 and every third year: fall—as arranged.)

The Staff

295–96 *Research* (arr.)
Prerequisite: Physiology 137 and 170; 150 or 232; or the equivalent. (Academic year—as arranged.)

The Staff

299–300 *Thesis* (3–3)

POLITICAL SCIENCE

Professors W. R. West *(Emeritus)*, J. W. Brewer*, W. H. Kraus, K. L. London

Professorial Lecturer F. M. Riddick
Associate Professors H. L. LeBlanc *(Chairman)*, Benjamin Nimer, H. R. Ludden
Associate Professorial Lecturer H. M. Bain, Jr.
Assistant Professors P. W. Conner, Kenneth McDonald
Lecturer C. H. Slayman, Jr.

FIRST GROUP

The Staff

1 *Introduction to Government*† (3)
Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations. (Fall—evening; spring—day; summer 1963.)

The Staff

9–10 *Government of the United States*† (3–3)
First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels. (*First half:* fall—day and evening; spring—day; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

SECOND GROUP†

LeBlanc

104 *State and Local Governments* (3)
State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. (Spring—evening.)

* On sabbatical leave 1963–64.
† Six hours of first-group Political Science courses are prerequisite to all second-group courses.

105 *The Governmental Process of the District of Columbia* (3) LeBlanc
Legal structure and political problems of the District of Columbia including restrictions on home rule, Congressional relations, and group politics. (Not offered 1963–64.)

107 *Problems in Modern Political Thought* (3) Kraus
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. (Not offered 1963–64.)

111 *Introduction to Comparative Government and Politics* (3) Kraus
Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France. (Fall—evening.)

112 *Introduction to Comparative Government and Politics* (3) Kraus
Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union. (Spring—evening.)

113 *Political Problems of the British Commonwealth of Nations* (3) Kraus
From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa. (Not offered 1963–64.)

117–18 *Political Theory: the Nature and Growth of Political Thought in the West* (3–3) Kraus
First half: from Classical Antiquity to the Middle Ages; the forging of the western political tradition. *Second half:* from the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, and resistance; liberalism, democracy, and conservatism. (Academic year—day.)

119–20 *Foundations of American Democracy* (3–3) Conner
Introduction to political thought in the United States from colonial times to the present. (Academic year—evening.)

121–22 *The Constitution of the United States* (3–3) West
Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights. (Academic year—day and evening; summer 1963—Political Science 121 (3).)

125 *Legislative Organizations* (3) Riddick
A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1963–64 and alternate years: fall—evening.)

141 *The Development of Legal Institutions* (3) Brewer
Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law. (Fall—day.)

145 *Political Parties and Politics* (3) LeBlanc
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. (Fall—day; summer 1963.)

146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day.)

151–52 *Public Administration* (3–3) LeBlanc
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests. (*First half:* fall—evening; summer 1963. *Second half:* not offered 1963–64.)

157–58 *Current Problems in Domestic Politics* (1–1) Slayman
Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies. (Academic year—evening.)

166 *Field Work in Government* (3) LeBlanc
Practical training in the operation of the Federal Government, based on experience through assignment to selected government offices. Students will have an opportunity to observe and participate in government in the Washington area. Open only to students in the Public Affairs curriculum, School of Government, Business, and International Affairs. (Fall and spring—as arranged.)

171 *International Politics* (3) Ludden, Nimer
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation. (Fall—day and evening; summer 1963.)

172 *International Organization: the United Nations* (3) Ludden
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. (Spring—day and evening; summer 1963.)

177 *Recent Trends in Latin American Politics and Government* (3) Davis
Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. (Fall—evening; summer 1963.)

178 *International Politics in the Western Hemisphere* (3) Davis
Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. (Spring—evening.)

181–82 *International Law* (3–3) Brewer
Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester. (Academic year—day and evening; summer 1963—Political Science 181 (3).)

187–88 *Current Problems in International Politics* (1–1) Slayman
Analysis of outstanding contemporary international issues with discussion of problems and policies. (Academic year—evening.)

191 *Politics of the Middle East* (3) Nimer
Domestic and international politics of Turkey, Iran, Israel, and the Eastern Arab States and Principalities. Special attention to the specifically regional aspect of the foreign policies of these countries. (Fall—evening.)

192 *Politics of North and Central Africa* (3) Nimer
Domestic and international politics of the Western Arab States, Ethiopia, Somalia, Liberia, and the newly independent states of former British, French, and Belgian Africa. Special attention to the specifically regional aspect of the foreign policies of these countries. (Spring—evening.)

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region. (Spring—evening.)

197 *Proseminar in International Affairs: Strategies of Contemporary American Foreign Policy* (3) Nimer
Analysis of diplomatic, economic, psychological, and military problems of United States foreign policy. Readings, term papers, and discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—evening; spring—day.)

THIRD GROUP

209–10 *Seminar: the Federal Government of the United States* (3–3) West
Advanced research including the legislative problems of Congress; relations of Congress with the Administration; constitutional and political powers of the President, the Cabinet, and the Executive Office of the President; the practical politics of the

presidency; and presidential policy leadership and control. (Academic year—evening.)

212 *Seminar: Comparative Government and Politics* (3) Kraus
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method. (Spring—evening.)

213 *Readings in Comparative Government and Politics* (3) Kraus
Readings and group discussions on methodological questions, comparative political and administrative institutions with attention to legislatures, the changing role of the executive, political parties, constitutional and totalitarian approaches to public management and public service, the role of the military, etc. (Fall—evening; summer 1963.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism. Each semester is devoted to a separately announced topic, such as socialism and communism, theories of resistance and revolution, problems of democratic theory. (Fall—evening.)

220 *Reading Course in Political Theory* (3) Kraus
Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Spring—evening.)

221–22 *Seminar: United States Constitution and the Judicial Function* (3–3) Conner
A study of constitutional interpretation as an aspect of the political process. (Academic year—evening.)

235 *Metropolitan Problems* (3) Bain
Growth of American cities and changing land use patterns in relation to internal transportation systems. The respective roles of the private automobile and of public transportation. The problems of financing and administering public transportation systems under public and private ownership. (Fall—evening.)

245–46 *The American Political Process: Political Parties and Interest Groups* (3–3) LeBlanc
First half: readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics requiring the use of basic research materials. (Academic year—evening.)

271–72 *Problems in International Politics and Organization* (3–3) Ludden
A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations. (Academic year—evening.)

273 *Public Opinion and Foreign Policy* (3) Ludden
Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy. (Fall—day.)

274 *Methods and Objectives of Foreign Policy* (3)
Examination of the objectives of foriegn policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives. (Spring—evening.)

277 *Seminar: Latin American Government* (3) Davis
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. (Fall—evening.)

278 *Seminar: Latin American Political Philosophy* (3) Davis
Research in political personalities and philosophies of 19th and 20th century Latin America. (Spring—evening.)

279 *Reading Course in International Affairs* (3)
Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. (Fall—evening; summer 1963.)

281–82 *Seminar: International Law and Relations* (3–3) Brewer
Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (*First half:* summer 1963. *Second half:* spring—evening.)

292 *International Politics and Government in the Middle East* (3) Nimer
Research and analysis of the international relations and major political problems of the Arab world and adjacent areas. (Spring—evening.)

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3)
Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East. (Academic year—evening.) The Staff

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963.)

INSTITUTE FOR SINO-SOVIET STUDIES

212 *Seminar: Comparative Government and Politics* (3) Kraus
Common and distinctive characteristics of the political systems within the Soviet Bloc. Variations in such areas as ideology, party, and governmental elites; party organization and activity; the military and its place; policies which illuminate the rise of polycentrism. (Spring—evening.)

215–16 *Seminar: the Sino-Soviet Bloc in World Affairs I–II* (3–3) London
First half: an integrated survey of the most significant issues of the Communist Movement and its manifestations in the Soviet Union and Red China. The effects of communist policy, strategy, and tactics on Bloc relations with the Western alliance and the neutral areas. *Second half:* examination of the political ramifications of the International Communist Movement and Communist relations with the non-Communist world, with special emphasis on the nonaligned countries in Africa, Asia, and Latin America. (Academic year—evening.)

217 *Seminar: Topics in Political Theory* (3) Kraus
Crucial theoretical problems, such as the nature of revolution, the dictatorship of the proletariat, the transition to communism, imperialism and national liberation in their development from Marx and Engels to Lenin, Khrushchev, and Mao Tse-tung. (Fall—evening.)

227 *Seminar: the East European Satellites* (3)
Survey: political, economic, and social conditions in the East-Central European Soviet satellites; emphasis on their relations with the USSR, the Warsaw Pact alliance, and their affiliation with the Council of Mutual Economic Assistance. Yugoslavia and Albania (break with Moscow and alliance with Peking). (Fall and spring—evening.)

229 *Seminar: Ideological Aspects of Chinese Communism** (3) (JAU)
Attractions of communism for Chinese intellectuals of the early 1920's. Comintern direction of the Chinese Communist Party. Unorthodoxy in early Maoism; the power

* Offered jointly by The George Washington University and American University. Classes offered at GWU will be designated "JGW", courses offered at AU will be designated "JAU". GWU students register at this University.

struggle in the Chinese Soviet Republic; the Yenan period, revisionist tendencies; Stalinism after 1946; liberalization and the "100 Flowers"; the "anti-rightest" movement and the trend toward Marx-Leninist fundamentalism; psychological influence of ideology. (To be offered on the uptown campus of American University, as course number 75.672.) (Fall—day.)

230 *Seminar: Operational Techniques of International Communism* Metzl (3)

Strategy and tactics of the International Communist Movement in the post-Stalin period, with emphasis on the *modus operandi* of Communist Parties, international and national Communist front organizations, and Sino-Soviet Bloc agencies in the free world. Prerequisite: a general understanding of Communist ideology and of the workings of political movements. (Fall and spring—evening.)

238 *Seminar: Legal Order in the USSR—a Survey of Soviet Law* Ramundo (3) *

Soviet legal system with particular emphasis upon the conventional nature of many of the Soviet solutions to the problem of bringing order to society; the unique Soviet features, such as "economic law," "socialist legality," the role of the Communist Party, and the "collective" as an arm of the law; and the impact of the legal system upon the individual. (Fall—evening.)

239 *Seminar: Communist Chinese Constitutional Law* (3)

Communist China's legal system; its unique features and differences with the Soviet Constitution; the constitutional role of the Communist Party and the Communist ideology; the impact of the Chinese legal system upon the lives of the individuals. (Fall and spring—evening.)

263 *Seminar: Communist China's Role in the Communist Movement* (3) Michael

An investigation of the relationship of the Chinese Communist party and its leadership to the Communist movement, Moscow and Comintern, and the Chinese part in the recent power struggle within the Communist Bloc. (Fall—evening.)

265 *Seminar: Communist Chinese Foreign Policy and Strategy* (3)

The external policies of Communist China and its relations with Bloc and non-Bloc countries; emphasis on Sino-Soviet relations; the world objectives of Chinese Communist leaders; Peking's international propaganda; foreign economic relations; expansionist intentions toward South and Southeast Asia. (Fall and spring—evening.)

267 *Seminar: Sino-Soviet Policy Toward the Nonaligned Afro-Asian Countries and Latin America* (3)

Relations between the Communist Bloc and the former colonial countries in Asia and Africa; Soviet and Communist Chinese economic and political infiltration of the new states; Sino-Soviet encroachment in Latin America. (Fall and spring—evening.)

296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3) Hinton

The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian Communist states; local Communist parties since World War II; Sino-Soviet rivalry. (Fall—evening.)

290 *Seminar: Problems of Soviet Political Strategy—Case Studies* Garthoff (2)

Analysis of a selected major Soviet foreign political problem, undertaken partly by each student individually and partly by the seminar, to clarify the various international political, military-political, economic, propaganda, and other factors which enter into Soviet policy-making. Assignment of individual problems will be based on the particular interests and background of each student. (Spring—evening.)

* Graduate students wishing to register for Political Science 238 in the spring semester may, with approval of the adviser, register for Law 493 *Soviet Law* (2) and be given supplementary assignments equivalent to one additional semester hour

288 *Seminar: Soviet Military Policy and Strategy* (3) Wolfe
Soviet developments in the area of military policy and strategy, with some attention to questions of intra-Bloc military cooperation; political context within which Soviet military policy is formulated; significant changes in recent Soviet military thought. (Fall and spring—evening.)

294 *Seminar: International Politics and Government in the Pacific Area* (3)
The Yenan period; Communist growth from 1937 to 1945; military developments; the breakdown of the united front and the triangular Communist-Kuomintang-Japanese struggle; special features of Chinese Communists during this period. American mediation and the second civil war, 1945–1949. The Chinese People's Republic; social, economic, and political developments; changes in the party line and their reflections in foreign policy. (Spring—evening.)

296 *Seminar: the Communist Bloc in Far Eastern International Politics* (3) Hinton
The Communist strategy for Asia; Stalin's Far Eastern policy; growth of local Communist movements; impact of World War II; Soviet post-war policy in Asia; victory in China; the Korean and Indochinese wars; armed struggle in South and Southeast Asia; wooing of the national bourgeoisie; development of the Asian Communist states; local Communist parties since World War II; Sino-Soviet rivalry. (Spring—evening.)

PSYCHOLOGY

Professors Thelma Hunt, J. L. Finan *(Chairman)*, E. L. Phillips, J. N. Mosél
Professorial Lecturers H. F. Hubbard, Margaret Ives, R. K. White
Associate Professors C. E. Tuthill, W. E. Caldwell, R. D. Walk, Eva Johnson, C. W. Hill, Virginia Kirkbride, L. E. Schlesinger *(Research)*
Associate Professorial Lecturers J. G. Colmen, C. J. Lindley, W. O. Jewell, A. R. Laney, R. M. Roth
Assistant Professors R. E. Nolan, Lila Ghent *(Research)*, Jacqueline Goodnow *(Research)*, R. R. Bonato *(Research)*, R. C. Petersen *(Research)*
Lecturers Janet Johnson, Eugene Stammeyer

FIRST GROUP

1 *General Psychology** (3) The Staff
The fundamental principles underlying human behavior. (Fall and spring—day and evening; summer 1963.)

5–6 *Principles and Methods of Psychology** (3–3) Walk and Staff
Lecture (2 hours), laboratory (2 hours). An experimental approach to the understanding of behavior. A variety of individual and class experiments are performed. Required of all psychology majors, who should take the course early in the major. May be taken without Psychology 1. *First half:* awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half:* topics of motivation, learning, memory, and problem solving. (Academic year—day and evening.)

* Psychology 1 or 5–6 is prerequisite to all other courses in Psychology.

8 *Psychology of Adjustment* (3) — The Staff
(Formerly Psychology 4)
Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques. (Fall and spring—day and evening; summer 1963 (offered as Psychology 4).)

22 *Introduction to Educational Psychology* (3) — J. Johnson
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day.)

29 *Child Psychology* (3) — E. Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1963.)

SECOND GROUP*

101 *Abnormal Psychology* (3) — Nolan, Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. (Fall—day and evening; spring—day; summer 1963.)

112 *Adolescent Psychology* (3) — E. Johnson
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day.)

115 *Psychology of Language and Communication* (3) — Mosél
An introduction to psycho-linguistics and verbal behavior. Information theory, the measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day.)

118 *Physiological Psychology* (3) — Finan, Hill
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior. (Fall—evening; spring—day; summer 1963.)

121 *Educational Psychology* (3)
Advanced course in educational psychology. Designed for those with background in education and psychology. (Fall and spring—evening; summer 1963.)

129 *Introduction to Counseling* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. (Fall—evening; summer 1963.)

131 *Psychological Tests* (3) — Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. (Fall—evening; spring—day; summer 1963.)

144 *Personnel Psychology* (3) — Mosél
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.)

148 *Psychology of Advertising and Consumer Behavior* (3)
The motivational and social processes in economic behavior. Consideration of current techniques and findings in motivational research. Evaluation of the effectiveness of mass media, public relations programs, and strategies of persuasion. (Fall—evening.)

* Six credits in first-group courses are prerequisite to all second-group courses.

151 *Social Psychology* (3) Tuthill
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war. (Fall—evening; spring—day; summer 1963.)

156 *Psychology of Propaganda and Public Opinion* (3) Tuthill
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare. (Spring—evening; summer 1963.)

161 *Comparative Psychology* (3) Caldwell
A lecture course in animal psychology. Covers psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation and research in psychology. (Spring—day.)

162 *Experimental Comparative Psychology* (3) Caldwell
Opportunity for individual psychological experimentation using lower animals as subjects. Offered on independent study plan. Prerequisite: Psychology 161 and permission of the instructor. (Fall and spring—as arranged.)

192 *Problems in Experimental Psychology* (3) Hill, Walk
Opportunity for work on individual experimental projects. Prerequisite: Psychology 5–6 and permission of the instructor. (Fall and spring—as arranged.)

193–94 *Readings in Psychology* (3–3) The Staff
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality-point index of 3.00 or higher. Admission by special permission of the instructor. (Academic year—as arranged; summer 1963.)

196 *History and Systems of Psychology* (3) Caldwell
A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology. (Fall—day; spring—evening; summer 1963.)

198 *Current Research Issues in Psychology* (3) Walk
Class will be conducted as a seminar and will consider recent experiments in Psychology, including those performed by undergraduates. Emphasis is on student participation. Open only to senior psychology majors. (Spring—day.)

THIRD GROUP*

201 *Advanced General Psychology* (3) Hill
An integrated review of history, theory, and facts in the area of general psychology: perception, motivation, learning, and cognition. Required of all psychology Master's candidates. (Fall—day; spring—evening; summer 1963.)

202 *Psychological Research Methods and Procedures* (3) Walk
Required in all graduate programs. Prerequisites: Experimental Psychology and an elementary course in statistics. (Fall—evening; spring—day; summer 1963.)

207–8 *Readings in Psychology for Graduate Students* (3–3) The Staff
Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings. (Academic year—as arranged; summer 1963.)

209 *Seminar: Psychology of Motivation* (3) Caldwell
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach. (Fall—evening.)

* Open only to graduate students, except by special permission of Instructor and Chairman of the Department.

212 *Personality Evaluation by Projective Techniques* (3) Nolan, Ives
Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 233. (Fall—day; spring—evening.)

213 *Clinical Psychometrics* (3) Ives
A study of the clinical applications of nonprojective tests. Prerequisite: Psychology 233. (Spring—evening.)

215 *Advanced Study of Projective Techniques* (3) Nolan, Ives
Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212. (Fall—evening; spring—day.)

217 *Seminar: Developmental Psychology* (3) Ghent
(Spring—day.)

218 *Seminar: Clinical Psychology—Psychopathology* (3) Nolan
Covers basic etiological factors in behavioral and psychological deviations and disorders. (Fall—day.)

219 *Seminar: Clinical Psychology—Psychotherapy* (3) Nolan
Covers theoretical principles underlying psychotherapy, techniques and procedures, and problems of evaluation. (Spring—evening; summer 1963.)

220 *Seminar: Abnormal Psychology* (3) Hunt
An intensive study of selected problems in the field of abnormal psychology. (Fall—day; spring—evening.)

223 *Seminar: Learning* (3) Finan
Covers research and theory in the psychology of learning. (Fall—evening.)

225 *Seminar: Mental Hygiene* (3) Phillips
A study of mental health problems with special attention to needs of counselors, teachers, and others working with children and adolescents. (Fall—evening; spring—day.)

226 *Seminar: Clinical Psychology of Childhood and Adolescence* (3) E. Johnson
A survey of behavior and personality disorders. (Spring—evening.)

231 *Test Construction* (3) Mosél
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics. (Fall—evening.)

233 *Individual Psychological Testing* (3) E. Johnson
Instruction and practice in giving of the Binet and Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7. (Fall and spring—day.)

234 *Seminar: Test Theory* (3) Mosél
Development of the axiomatic-deductive theory underlying the major notions in the construction, evaluation, and application of psychological tests. (1964–65 and alternate years.)

235 *Seminar: Psychological Measurement* (3) Hunt
Advanced instruction in the use and interpretation of psychological tests, with emphasis upon group tests; survey of recent research in psychological measurement. Prerequisite: a course in psychological or educational measurement. (Spring—evening.)

254 *Seminar: Job Analysis and Evaluation* (3) Mosél
(Summer 1963.)

245 *Seminar: Employee Motivation and Morale* (3) Mosél
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design. (Spring—evening.)

246 *Seminar: Personnel Measurement Techniques* (3) Mosél
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings. (Fall—evening.)

249 *Seminar: Systems Development and Human Engineering* (3) Finan
Application of findings and methods of experimental psychology to design and operation of equipment and man-machine systems. Relation of capacities of the operator to information display systems, control mechanisms, work environment, and work methods. (Fall—evening.)

251 *Seminar: Advanced Social Psychology* (3) Tuthill
Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory. (Fall—evening.)

254 *Seminar: Group Dynamics* (3) Tuthill
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes. (1963–64 and alternate years: spring—evening.)

255 *Seminar: Techniques of Opinion and Attitude Measurements* (3) Tuthill
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc. (1964–65 and alternate years.)

258 *Applied Social Psychology* (3) Mosél
The development of personality, personality adjustment, nature of communication and interaction; structure and functioning of groups, group dynamics, opinion and attitude formation, and opinion and attitude measurement. Classroom activity supplemented by practical observations and projects. Open only to graduate students in hospital administration, engineering administration, and other graduate administrative programs. (Spring—day and evening.)

259 *Seminar: Social Psychology of Communism* (3) White
Psychological aspects of authoritarian systems and of all-embracing political ideologies; methods and findings in the study of public opinion in the USSR and its satellites; problems of Western communications with the USSR; the nature of Communist propaganda and the appeals of Communism in non-Communist countries. (Fall—evening.)

261 *Seminar: International Communication* (3) Mosél
The communication process, problems in mass communication, measuring and modifying opinions and attitudes, principles of persuasion, psychological warfare. (1963–64 and alternate years: spring—evening.)

262 *Dynamics of Social Change* (3) Lippitt
Current research and theory related to the process of social change. Basic principles of planned change will be explored in connection with individual, group, organization, community, and cultural change. Human factors in the change process will be emphasized. (Spring—evening.)

264 *Sensitivity Training: Human Relations Laboratory Course* (3) Lippitt
A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunities for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology. (Fall and spring—evening.)

265 ***Theory and Design in Human Relations Training*** (3) **Lippitt**
Designed for those interested or involved in conducting human relations training. Theories of learning are reviewed. The laboratory approach to human relations training is explored in depth. Practice in designing, developing training skills, and evaluation of training are covered. Prerequisite: Psychology 264 or a human relations laboratory learning experience. (Fall—day.)

267 ***Theories of Organization*** (3) **Schlesinger**
Theory and research in formal organizations. Classical, human relations, and information processing theories of organizations. The effects of organizational design on communication processes, leadership, decision-making, intergroup relations, small group formation, status hierarchies, productivity, motivation, and morale. Open to graduate students in psychology and graduate administrative programs. (Spring—day.)

272 ***Seminar: Theories of Personality*** (3) **Caldwell**
A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study. (Fall—evening.)

281–82 ***Practicum in Counseling*** (3–3) **Phillips**
Supervised practical instruction in agencies doing counseling. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

283–84 ***Practicum in Clinical Psychology*** (3–3) **Nolan**
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of the Chairman of the Department. (Academic year—as arranged; summer 1963.)

289–90 ***Seminar: Current Research and Theory in Psychology*** (3–3)
A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester. (Academic year—evening; summer 1963—Psychology 289 (3).)

292 ***Seminar: Perception*** (3) **Walk**
Study of current research and theory in the experimental psychology of perception. (Spring—day.)

293 ***Seminar: Psychology of Thinking*** (3) **Goodnow**
Thinking and problem solving. Specific topics include: concept formation, the nature of insight, creative thinking, and originality. (Fall—evening.)

295–96 ***Research in Psychology*** (arr.) **The Staff**
Individual research by student, carried out under supervision of staff member. (Academic year—as arranged; summer 1963.)

297–98 ***Seminar: Concepts of Psychology*** (4–4) **Finan and Staff**
Lecture (3 hours), discussion (1 hour). An overview and analysis of the concepts and major areas of psychology. Designed as a review and integration of knowledge for the Ph.D. candidate preparing for the Comprehensive Examination in general psychology and as a preparation for specialized study and individual research. Required of all Doctoral candidates in psychology. (Academic year—evening.)

299–300 ***Thesis*** (3–3) **The Staff**
(Academic year—as arranged; summer 1963.)

RELIGION

Professor J. R. Sizoo
Professorial Lecturer T. A. Stone
Associate Professor R. G. Jones *(Chairman)*
Associate Professorial Lecturers C. D. Kean, Damian McElrath
Assistant Professor H. E. Yeide, Jr.
Lecturers A. B. Seidman, E. W. Seaman

FIRST GROUP

9 *The Old Testament* (3) — Jones and Staff
A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening.)

10 *The New Testament* (3) — Jones and Staff
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles. (Spring—day and evening; summer 1963.)

59–60 *History of Religion* (3–3) — The Staff
First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status. (Academic year—day and evening; summer 1963.)

SECOND GROUP

103 *The Prophets, Their Times and Their Message* (3) — Jones
The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study. (Fall—evening.)

104 *The Life and Thought of Jesus* (3) — Kean
A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times. (Spring—evening.)

105 *The Life and Thought of Paul* (3) — Jones
Greek and Hebrew backgrounds of early Christianity, the Roman world of the first century, religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's teaching and presentation of the Christian faith, the place of the Pauline epistles in the New Testament. (Fall—day.)

121 *Problems of Western Religious Thought* (3)
The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history. (Not offered 1963–64.)

122 *Christian Ethics and Modern Society* (3) — Jones
The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. (Summer 1963.)

131 *History of Christianity to the Reformation* (3) McElrath and Staff
The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent. (Fall—day.)

132 *History of Modern Christianity* (3) McElrath and Staff
The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day.)

135 *History of Judaism to the Talmud* (3) Seaman
A study of the history and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day.)

136 *History of Medieval and Modern Judaism* (3) Seaman
A study of the history and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day.)

141–42 *Religious Education* (3–3)
Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1963–64.)

172 *Religion in American Culture* (3) The Staff
Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion. (Spring—day.)

THIRD GROUP

209–10 *Seminar in Biblical Literature* (3–3) Jones
Study of the main problems of Biblical literary and historical criticism. (Not offered 1963–64.)

211–12 *Seminar in Biblical Thought* (3–3) Jones
Study of the Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Academic year—evening.)

231–32 *Seminar in Early and Medieval Christianity* (3–3) Jones and Staff
An advanced study of the development of Christian thought from primitive beginnings to the Reformation. (Not offered 1963–64.)

233–34 *Seminar in Modern Religious Thought* (3–3) The Staff
Analysis of developments in western religious thought from the 16th century to the present. (Academic year—evening.)

241–42 *Seminar in Religious Education* (3–3)
Advanced course dealing with some of the major problems in the practice of religious education. (Not offered 1963–64.)

271 *Seminar in American Religious History to 1830* (3) The Staff
Study of religious thought and life during the colonial and early national period. (Fall—as arranged.)

273 *Seminar in American Religious History since 1830* (3)
Analysis of modern and contemporary trends in American religious thought. (Not offered 1963–64.)

291–92 *Readings and Research* (3–3) The Staff
Investigation of special problems in the history of religion. (Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

RELATED COURSES IN OTHER DEPARTMENTS

Art 115, *Christian Iconography* (3)
Classical Languages and Literatures 11–12, *First-year Greek* (3–3)
Classical Languages and Literatures 13–14, *Second-year Greek* (3–3)
Classical Languages and Literatures 21–22, *First-year Classical Hebrew* (3–3)
Classical Languages and Literatures 23–24, *Second-year Classical Hebrew* (3–3)

ROMANCE LANGUAGES AND LITERATURES

Professors A. T. Deibert *(Emeritus)*, G. E. McSpadden, L. A. Vignéras, Rafael Supervía, W. G. Clubb *(Chairman)*
Associate Professors J. W. Robb*, G. E. Mazzeo, J. A. Frey
Assistant Professors J. L. Metivier, Jr., Fred Abrams
Instructors Elizabeth Neyman, G. P. Huvé, Eulogia Llansa, R. M. Riggs
Lecturer Esther Lawton
Language Workshops Supervisor R. T. Tyser

Courses are generally conducted in the language concerned. For General Courses in Romance Languages and Literatures (French, Italian, Portuguese, Spanish), see pages 146–47.

FRENCH

FIRST GROUP

1–2 ***First-year French*** **(3–3)** The Staff
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963.) *Second half:* fall and spring—day and evening; summer 1963.

3–4 ***Second-year French***† **(3–3)** The Staff
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester. Prerequisite: French 1–2 or two years of high school French. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

9–10 ***French Conversation and Composition*** **(3–3)** The Staff
Prerequisite: French 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

* On sabbatical leave spring semester 1963-64.
† French 3-4 is required, and French 51-52 is recommended, as prerequisite to all second-group courses.

49 *French Readings for Nonmajor Students* (3) Frey and Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening; summer 1963.)

51–52 *Survey of French Literature and Civilization** (3–3) Metivier
The social, artistic, and cultural background of French civilization. Lectures, readings, recitations, and informal discussions. (Academic year—day and evening.)

SECOND GROUP*

109–10 *Advanced French Conversation and Composition* (3–3) Vignéras
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: French 10 or the equivalent and permission of the instructor. (Academic year—day.)

119–20 *French Literature of the 16th Century* (3–3) Metivier
Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. (1963–64 and alternate years: academic year—evening.)

121–22 *French Literature of the 17th Century* (3–3) Clubb
History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (1964–65 and alternate years.)

123–24 *French Literature of the 18th Century* (3–3)
History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

125–26 *French Literature of the 19th Century* (3–3) Frey
Romanticism and realism: fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years.)

127–28 *French Literature of the 20th Century* (3–3) Clubb
Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129–30 *Contemporary French Literature* (3–3) Clubb
Existentialism and surrealism in the novel, poetry, and drama from 1938 to the present. Lectures, discussions, and reports. (Summer 1963—French 130 (3).)

199–200 *Proseminar: Readings for the Major in French Literature* (3–3) Frey
Conferences and group discussions. (Academic year—as arranged.)

THIRD GROUP

301 *Doctoral Seminar* (3) Clubb
Introduction to the doctoral program. Methods of research and presentation in the Romance languages and literatures. (Not offered 1963–64.)

302 *History and Methods of Literary Analysis and Criticism* (3)
Literary criticism from Aristotle to the New Critics. Methods to be demonstrated and applied to selected passages from French literature. Emphasis on technique known as *explication de texte*. (Not offered 1963–64.)

303 *Problems of Pronunciation and Intonation* (3) Vignéras
(Fall—day.)

* French 3-4 is required, and French 51-52 is recommended, as prerequisite to all second-group courses.

212 *Historical French Grammar* (3) Vignéras
Study of phonology, morphology, and syntax of Old French, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in French literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses, and an elementary knowledge of Latin. (Spring—day.)

213–14 *Old French* (3–3) Vignéras
Survey of French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and the permission of the instructor. (Academic year—day.)

224 *Seminar: The Age of Rabelais* (3)
Humanism and the Reformation in French letters. Rabelais and the *conteurs*. Research projects, papers, reports. (1963–64 and alternate years: fall—day.)

225 *Seminar: The Age of Montaigne* (3)
Montaigne: the man and the development of his thought. The literature of the Religious Wars. Research projects, papers, reports. (1963–64 and alternate years: spring—day.)

226 *Seminar: French Poetry from Villon to Malherbe* (3) Frey
Theories and the practice of the art of poetry in the French Renaissance. The cultivation of a poetic language and the development of genres. Papers, reports. (1964–65 and alternate years: fall.)

227 *Seminar: The Renaissance in Europe* (3) Clubb
The sources and nature of literary trends in Western Europe from Dante to Calderón, and their relationship to French literature. Readings, papers, and discussion. (1964–65 and alternate years: fall.)

231–32 *Theater in the 17th Century* (3–3) Clubb
A survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121–22 or the equivalent. (1964–65 and alternate years: academic year.)

233 *Seminar: 17th Century Literary Doctrines* (3) Clubb
The origin and formation of literary doctrines and theories and their relationship to prose, poetry, and drama of the 17th century. Readings, discussions, and papers. (Offered 1964–65.)

234 *Nondramatic Literature of the 17th Century* (3) Clubb
Rationalism and the revolt against authority expressed in literature. Discussion of texts and collateral readings. (Fall—day.)

240 *The Sentimental Current in the 18th Century* (3)
Sentimentality in the novel and drama of 18th century France. English influences on French authors. The meaning of sentimentality and its later influences. (Offered 1964–65.)

241 *The Rationalistic Current in the 18th Century* (3)
Bayle, Fontenelle, Montesquieu, Voltaire, Rousseau, Diderot, and the Encyclopedists as philosophers, dramatists, and critics of their age; an assessment of their contributions to the intellectual evolution of France and Europe. (Offered 1964–65.)

242 *Seminar: the French Novel in the 18th Century* (3)
Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Offered 1965–66.)

243 *Voltaire and Rousseau* (3)
Voltaire and Rousseau as representatives and critics of their age. (Fall—day.)

244 *Seminar: Diderot and the Encyclopedia* (3)
Diderot's contribution to 18th century novel, drama, and aesthetic criticism; the Encyclopedia as embodiment of 18th century thinking. (Spring—day.)

250 *Romanticism in France* (3) Frey
The theory and practice of romanticism in France: romantic love, the Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. Romantic criticism. The preparation for realism. (Offered 1965–66.)

251 *Realism and Naturalism* (3) Frey
Prose style in the French novel from Balzac to Zola; the influence of history, science, philosophy, and art on the literary doctrines of realism and naturalism; realistic currents with romanticism; the minor realists and naturalists; realism in poetry and in the theatre. (Offered 1965–66.)

252 *Seminar: Flaubert* (3) Frey
Reading and analysis of the works of Flaubert from *Mémoirs d'un fou* to *Bouvard et Pécuchet*, plus selected correspondence. Romantic elements in the works of Flaubert; Flaubert and the impersonality of the writer, the doctrine of art for art, Bovarysme, style indirect libre. Contemporary criticism of Flaubert. (Offered 1964–65.)

253 *Seminar: Symbolism in Poetry* (3) Clubb
The origin and nature of symbolism from Baudelaire to Valéry. Class analysis of texts and reports. Prerequisite: French 127–28 or the equivalent. (Offered 1964–65.)

254 *Seminar: Victor Hugo* (3) Frey
Hugo and the development of the romantic ideal in prose and poetry; Hugo and romantic theater and criticism. Analysis, classification, and criticism of romantic themes and techniques in the works of Hugo; contemporary Hugo criticism. (Offered 1964–65.)

255 *Seminar: Stendhal and Le Beylisme* (3) Clubb
Stendhal's novels and autobiographical works. Stendhal and his public. Readings, discussions, and papers. (Offered 1965–66.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

SPANISH

FIRST GROUP

1–2 *First-year Spanish* (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year Spanish** (3–3) The Staff
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in electronic language laboratory. Laboratory fee, $6 a semester. Prerequisite: Spanish 1–2 or two years of high school Spanish. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall—day; spring—day and evening; summer 1963.)

5–10 *Spanish Conversation and Composition* (3–3) The Staff
Prerequisite: Spanish 4 or the equivalent and permission of the instructor. (Academic year—day and evening; summer 1963.)

* Spanish 5–4 is required, and Spanish 51–52 is recommended, as prerequisite to all second-group courses in Spanish.

49 *Spanish Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted only with specific permission of the instructor. No academic credit for graduate students. (Fall and spring—evening.)

51–52 *Survey of Spanish Literature and Civilization** (3–3) Supervía
The social, artistic, and cultural background of Spanish civilization. Lectures, readings, recitations, and informal discussion. (1963–64 and alternate years: academic year—evening; 1964–65 and alternate years: academic year—day.)

SECOND GROUP*

109–10 *Advanced Spanish Conversation and Composition* (3–3) Mazzeo
Normally diction will receive greater emphasis in the fall semester and style in the spring semester. Prerequisite: Spanish 10 or the equivalent and permission of the instructor. (Academic year—day.)

121–22 *Spanish Literature of the Golden Age* (3–3) Abrams
Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry, prose. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

123–24 *Cervantes: Don Quijote* (3–3) McSpadden
Life and works of Cervantes: the *Quijote* and its relationship to other works of the Golden Age. Lectures, discussions, and reports. (1964–65 and alternate years.)

125–26 *Modern Spanish Literature* (3–3) Mazzeo
Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (1964–65 and alternate years: academic year—day.)

127–28 *Contemporary Spanish Literature* (3–3) Supervía
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (1963–64 and alternate years: academic year—day.)

129 *The Romantic Drama in Spain* (3) Mazzeo
Class analysis of texts, collateral reading, and lectures on the Spanish Romantic Drama. (Summer 1964 and alternate summers.)

151–52 *The Spanish-American Novel* (3–3) Robb
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (1965–66 and every third year.)

155–56 *Spanish-American Literature to 1880* (3–3) Robb
The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (1963–64 and every third year: academic year—evening.)

157–58 *Spanish-American Literature since 1880* (3–3) Robb
The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (1964–65 and every third year; summer 1963—Spanish 158 (3).)

197–98 *Proseminar: Readings for the Major in Spanish-American Literature* (3–3) Robb
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

199–200 *Proseminar: Readings for the Major in Spanish Literature* (3–3) Abrams
Required of all majors. Conferences and group discussions. (Academic year—as arranged.)

* Spanish 3–4 is required, and Spanish 51–52 is recommended, as prerequisite to all second-group courses in Spanish.

THIRD GROUP

201 *Doctoral Seminar* (3) — The Staff
Introduction to the doctoral program, advanced study and methodology in the Romance languages and literatures. (Not offered 1963–64.)

202 *Explicación de textos* (3) — Robb
An analytical introduction to the study of Spanish and Spanish-American literature. The method will be demonstrated and practiced on selected passages. (1964–65 and alternate years.)

212 *Historical Spanish Grammar* (3) — McSpadden
Study of phonology, morphology, syntax, and lexicology of Old Spanish, including its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1965–66.)

214 *Old Spanish* (3) — McSpadden
Literature and language: *El poema de Mio Cid, El Conde, Lucanor, El Libro de Buen Amor*, etc. Prerequisite: a second-group course in Spanish literature, Romance 279 *Introduction to Romance Philology and Linguistics* (see General Romance Courses), and an elementary knowledge of Latin. (Offered 1964–65.)

221 *Seminar: Works of Cervantes* (3) — McSpadden
Problems of composition, interpretation, criticism, literary history, and aesthetics. (Offered 1964–65.)

222 *Seminar: Spanish Mystics* (3)
A study of Spanish mysticism with particular attention to the poetry of Ramon Lull, Fray Luis de León, Santa Teresa, San Juan de la Cruz, and other mystics. (Offered 1964–65.)

223 *Seminar: Drama of the Golden Age* (3) — Abrams
A study of the Spanish theater from its beginnings to Calderón. Reading and analysis of representative works of Lope, Tirso, Alarcón, Calderón, and the pre-Lopistas. (Offered 1964–65.)

224 *Seminar: the Renaissance in Spain* (3) — Abrams
A study of the thought and literary currents that led to the Spanish Renaissance and its development. (Spring—day.)

225 *Seminar: Lyric Poetry of the Golden Age* (3) — Supervía
A study of the principal lyric poets from Garcilaso. (Fall—day.)

226 *Seminar: Picaresque Novel* (3) — Abrams
The Picaresque genre in Spain: origin and development and most recent manifestations. Reading and commentary on texts. (Offered 1965–66.)

227 *Seminar: Lope de Rueda* (3) — Abrams
Origins of the Spanish popular theater. Influence of Plautus and the Italian theater on the art of Rueda. Popular language in the *pasos* and comedies of Rueda. Influence of Rueda on Cervantes. Explication of texts. (Fall—day.)

231 *Seminar: Spanish Writers of the 18th Century* (3) — Mazzeo
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Offered 1965–66.)

241 *Seminar: Works of Galdós* (3) — Supervía
Ideological and stylistic analysis; relationship of his works to the literary movements of the second half of the 19th century. (Offered 1964–65.)

242 *Seminar: Spanish Romanticism* (3) — Mazzeo
Lectures and analysis of principal works and authors. Collateral readings. Problems of origins and developments. (Spring—day.)

244 *Seminar: the Spanish Novel of the 19th Century* (3) Mazzeo
A study of the leading Spanish novelists of the 19th century. Reading and analysis of important works. (Offered 1964–65.)

251 *Seminar: Works of Unamuno and Ortega y Gasset* (3) Supervía
A study of the thought of Unamuno and Ortega y Gasset; reading of texts and commentaries. (Offered 1965–66.)

252 *Seminar: Spanish Literature since the Civil War* (3) Supervía
A study of all literary currents in Spain since the Civil War: drama, prose, poetry. (Offered 1965–66.)

253 *Seminar: Modernismo* (3) Robb
A study of the genesis and development of Modernismo in Hispanic America and Spain with special attention to Spain. (Spring—day.)

261 *Seminar: Spanish-American Essayists* (3) Robb
The Spanish-American essay as an artistic form, studied in selected modern essayists such as Rodó, Ricardo Rojas, Vasconcelos, Arciniegas. (Fall—day.)

262 *Seminar: Contemporary Spanish-American Poetry* (3) Robb
Studies of aesthetic principles and poetic movements. Emphasis on Huidobro, Neruda, and others. (Spring—day.)

263 *Seminar: Contemporary Spanish-American Novelists* (3) Robb
Selected contemporary novelists such as Gallegos, Barrios, M. Rojas, J. R. Romero, Carlos Fuentes, Alejo Carpentier. (Offered 1964–65.)

264 *Seminar: Contemporary Spanish-American Short Story* (3) Robb
Twentieth Century *Cuentistas* from Quiroga to J. L. Borges, J. J. Arreola, and others (Offered 1964–65.)

266 *Seminar: Alfonso Reyes* (3) Robb
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Offered 1965–66.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

GENERAL COURSES IN ROMANCE LANGUAGES AND LITERATURES

270 *Experimental Phonetics* (3) McSpadden
History; problems and methods of analysis in the physiological and acoustical branches of phonetics and intonation, their relationships, their application to the Romance languages, and oral aspects of the Romance literatures. (Spring—day.)

272 *Comparative Romance Languages and Literatures I (Italian)* (3) Clubb
Intensive study of Italian grammar with reference to French, Spanish, and other Romance languages. (1964–65 and alternate years.)

273 *Comparative Romance Languages and Literatures II (Italian)* (3) Clubb
For candidates for the degree of Doctor of Philosophy. The Italian language and literature from Dante to Goldoni. Lectures, discussions, exercises, and readings. Prerequisite: Romance 272 *Comparative Romance Languages and Literatures I* or the equivalent. (1964–65 and alternate years.)

275–76 *Comparative Romance Languages and Literatures III–IV (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Lectures, discussions, exercises, and readings. (Academic year—day.)

277–78 *Comparative Romance Languages and Literatures V–VI (Portuguese)* (3–3) Robb
For candidates for the degree of Doctor of Philosophy. Portuguese and Brazilian literatures from Camões to the 20th century. (Offered 1964–65.)

279 *Introduction to Romance Philology and Linguistics* (3) McSpadden
Study of principles found in the development of the Romance languages and methods of analysis at the present time. A general course for graduate students in the fields of the Romance languages and literatures. Prerequisite: an elementary knowledge of Latin. This course is normally followed by French 212 or Spanish 212. (Offered 1965–66.)

280 *Introduction to Romance Stylistics* (3) Frey
Special emphasis will be placed on examples from French and Spanish literature. (Offered 1964–65.)

283 *Problems of Teaching Romance Languages and Literatures in College* (3) McSpadden
For candidates for the degree of Doctor of Philosophy. Principles and problems of learning and teaching the language and literature. Apprenticeship in college classes and the language laboratory. (Offered 1964–65.)

SECRETARIAL STUDIES

Lecturer W. R. Throckmorton
Associate Ruth Tyler

1 *Elementary Typewriting* (3) The Staff
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $7. (Fall and spring—evening.)

2 *Intermediate Typewriting* (3) The Staff
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $7. (Fall—evening; spring—day and evening.)

11 *Elementary Shorthand and Transcription* (3) The Staff
A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $3. (Fall—day and evening.)

12 *Intermediate Shorthand and Transcription* (3) The Staff
Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, $5. (Spring—day and evening.)

Advanced Shorthand, Typewriting, and Transcription (3) The Staff
Dictation and transcription involving vocabularies in specific businesses. *Minimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, $5. (Fall—day.)

16 *Secretarial Shorthand, Typewriting, and Transcription* (3) The Staff
Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, $5. (Spring—day.)

51 *Business Correspondence* (3) The Staff
Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature. (1963–64 and alternate years: fall—evening; 1964–65 and alternate years: fall—day.)

54 *Secretarial Practice* (3) The Staff
A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships. (Spring—day.)

SLAVIC LANGUAGES AND LITERATURES

Associate Professor Helen Yakobson* *(Chairman)*
Assistant Professors G. A. Olkhovsky, Nadine Popluiko
Lecturers Kiril Jaszenko, M. I. Filipovitch-Nikatch, Victoria Sandor

FIRST GROUP

1–2 *First-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. A beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in electronic language workshop. Workshop fee, $6 a semester. (*First half:* fall and spring—day and evening; summer 1963. *Second half:* fall and spring—day and evening; summer 1963.)

3–4 *Second-year Russian* (3–3) Yakobson and Staff
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Workshop fee, $6 a semester. (*First half:* fall—day and evening; spring—evening. *Second half:* fall—evening; spring—day and evening.)

9–10 *Russian Conversation* (3–3) The Staff
Listening comprehension and oral practice. Prerequisite: Russian 3–4 or permission of the instructor. Workshop fee, $6 a semester. (Academic year—evening.)

47 *Beginning Russian for Reading Examination Candidates* (0) The Staff
For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, $108. (Fall—evening.)

49 *Russian Readings for Nonmajor Students* (3) The Staff
Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students. Prerequisite: Russian 4 or 47 or the equivalent. (Spring—evening.)

91–92 *Introduction to Russian Literature* (3–3)
A survey of Russian literature, in translation, from the earliest periods through the literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion. (Academic year—day.)

* On sabbatical leave spring semester 1963–64.

93–94 *Introduction to Slavic (non-Russian) Literature* (3–3) Filipovitch-Nikatch

A survey of non-Russian Slavic literatures, in translation, from the early periods to the present, with emphasis on the contemporary scene. Lecture, recitation, and discussion. (Academic year—evening.)

SECOND GROUP

101–2 *Readings in Modern Russian* (3–3) Yakobson and Staff

Representative readings in the social sciences and Soviet periodical literature; study of current political terminology, abbreviations, and Soviet idiom. (1963–64 and alternate years: academic year—evening.)

103–4 *Scientific Russian* (3–3) The Staff

Readings in the major fields of Russian contemporary scientific literature. (1964–65 and alternate years.)

109–10 *Advanced Russian Conversation and Composition* (3–3) Yakobson

Developing proficiency in oral and written expression. (Academic year—evening; summer 1963.)

141–42 *Russian Literature of the 19th Century* (3–3) Yakobson

Lectures, special reports, class analysis of selected works of 19th century Russian literature—in Russian. (1964–65 and alternate years.)

151–52 *Russian Literature of the 20th Century* (3–3) Yakobson

Lectures, special reports, class analysis of selected works of 20th century Russian literature—in Russian. (Academic year—day.)

161–62 *Russian Culture* (3–3) Olkhovsky

A survey of Russian cultural heritage from the origins of ancient Russia to the present. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening.)

179–80 *Advanced Grammar and Composition for Russian Majors* (1–1) Yakobson

(Academic year—as arranged.)

SOCIOLOGY AND ANTHROPOLOGY

Professors H. L. Geisert, R. W. Stephens *(Acting Chairman)*
Associate Professors R. G. Brown, J. M. Campbell
Assistant Professor P. F. Gallagher
Lecturers Margaret Nelson, Cynthia Nathan, Carmi Schooler

SOCIOLOGY

FIRST GROUP

2 *Man, Culture, and Society II*[*] (3) The Staff

(Formerly Sociology and Anthropology 1)

Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology. (Fall and spring—day and evening; summer 1963.)

[*] Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

Nathan

41 *American Social Problems* (3)
(Formerly Sociology and Anthropology 2)
Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment. (1963–64 and alternate years: fall—day.)

SECOND GROUP

Nathan

120 *Aging in Modern Society* (3)
Aging as a biological and sociological phenomenon; development of old age as a social problem with special emphasis on economic dependency and employment; the social role of the aged. (1963–64 and alternate years: spring—day.)

123 *Fields of Social Work* (3)
Introduction to the nature and scope of social work; the development of social work program; functions of social case work, social group work, and social action. (1963–64 and alternate years: fall—evening.)

Nathan

124 *Medical Sociology* (3)
Sociological factors and processes which relate to physical and mental health and disease; analysis of patterned social relationships in the field of health and medicine; the hospital as a social system. (1964–65 and alternate years.)

126 *Urban Sociology* (3)
The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development. (1963–64 and alternate years: spring—day.)

129 *Race and Minority Groups* (3)
Analysis of the relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (1963–64 and alternate years: fall—day.)

Nelson

130 *Social Stratification: Class and Status* (3)
(Formerly Sociology and Anthropology 161)
Nature of class structure patterns of status, prestige relations in American society, differential class behavior, analysis of comparative social structure and social mobility. (1964–65 and alternate years.)

131 *Social Institutions* (3)
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society. (1964–65 and alternate years.)

Stephens

132 *Courtship and Marriage* (3)
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling. (1963–64 and alternate years: spring—day.)

Stephens

133 *The Family* (3)
Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization. (1964–65 and alternate years; summer 1963.)

Perian

135 *Juvenile Delinquency* (3)
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (1964–65 and alternate years.)

Perian

136 *Criminology* (3)
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (1964–65 and alternate years.)

137 *Sociology of Law* (3)
The law as a social phenomenon and an agency of social control. Sociological analysis of particular problems of legal concepts, doctrine, and institutions. (1963–64 and alternate years: spring—evening.)

140 ***Military Sociology*** (3)

The study of the military establishment as one of the important institutions of modern society; an analysis of the distinctive forms of military organization; the social role of the professional military man. (1963–64 and alternate years: spring—evening.)

144 ***Mass Communications*** (3)

The communications process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication. (1964–65 and alternate years.)

146 *Industrial Sociology* (3) Stephens

Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale. (1964–65 and alternate years.)

147 *Sociology of Large Organizations* (3) Stephens

Sociological analysis of the structural characteristics of large complex organizations; individual accommodations to such organizations; the impact of the large organizational pattern on American social life. (1964–65 and alternate years.)

148 *Methods of Social Research* (3) Schooler

(Formerly Sociology and Anthropology 181)

Analysis of social research techniques and the scientific method; application to social data of the case study, social survey, statistical, sociometric, and experimental methods. (1963–64 and alternate years: fall—day.)

149 *Development of Social Theory* (3) Stephens

Systematic study of the important schools of sociological theory, both European and American developments; and evaluation of the scientific contributions of each school. (1963–64 and alternate years: spring—day.)

THIRD GROUP

221 *Seminar: Current Trends in Sociology* (3) Geisert

Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology. (1964–65 and alternate years.)

225 ***Seminar: Small Groups*** (3)

General characteristics of small groups and their measurement; sociography of groups, evaluation of small group theory and sociometry; other techniques of small group research. (1963–64 and alternate years: fall—as arranged.)

226 *Problems of Underdeveloped Areas* (3) Geisert

Characteristics and problems of underdeveloped areas; the interrelationship of demographic, economic, social, and cultural factors; measures and techniques to introduce cultural changes. (1964–65 and alternate years; summer 1963.)

228 *Criminal Behavior: Research and Theory* (3) Geisert

A reevaluation of theories of criminal and deviant behavior, based on recent research findings; implications for the correction and prevention of criminal behavior. (1964–65 and alternate years.)

235 ***Social Movements*** (3)

(Formerly Sociology and Anthropology 162)

Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and showing the way social movements develop. (1963–64 and alternate years: spring—as arranged.)

241 ***Population Problems*** (3)

Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control. (1964–65 and alternate years.)

295,296 *Research* (arr.) The Staff

(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

ANTHROPOLOGY

FIRST GROUP

1 *Man, Culture, and Society I** (3) The Staff
(Formerly Sociology and Anthropology 51)
The physical evaluation of man and the origins and development of culture, including a survey of the topic divisions of the field. (Fall and spring—day and evening; summer 1963.)

SECOND GROUP

152 *Physical Anthropology* (3)
A survey of human biology. The mechanisms of speciation and the race process, including their cultural determinants. (1963–64 and alternate years: spring—evening.)

153 *Psychological Anthropology* (3) Gallagher
The relevance of psychoanalytic and learning theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (1963–64 and alternate years: fall—day; summer 1963.)

154 *Primitive Economics* (3) Gallagher
The comparative study of preindustrial systems of production, distribution, and consumption. An inquiry into the applicability of Western laws of economic analysis to non-Western societies. (1963–64 and alternate years: spring—day.)

155 *Primitive Religion* (3) Campbell
Conceptions of the supernatural in nonliterate societies. An examination of religious beliefs and practices; the interrelatedness of religion, magic, and philosophy. (1964–65 and alternate years.)

161 *Language and Culture* (3) Gallagher
(Formerly Sociology and Anthropology 143)
The structure and semantics of systems of human communication, linguistic change, the influence of language on world view. (1963–64 and alternate years: fall—day.)

172 *Native People of the New World* (3) Gallagher
A survey of representative Indian groups of the Americas from primitive bands to high civilizations, stressing the patterned nature of diverse cultural responses to universal problems of human existence. (1963–64 and alternate years: spring—day.)

173 *Cultures of the Pacific* (3) Campbell
A study of the culture, history, and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1964–65 and alternate years.)

182 *New World Archeology* (3) Gallagher
A survey of pre-Columbian culture history, from man's entry into the Americas during the Pleistocene Ice Age until the time of the first European contacts. (1963–64 and alternate years: spring—day.)

183 *Old World Archeology* (3) Campbell
A survey of the culture of history of man exclusive of the Americas, from the earliest hominid cultures to the advanced civilizations and their secondary centers. (1963–64 and alternate years: fall—day.)

192 *Anthropological Theory* (3) Campbell
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (1963–64 and alternate years: fall—evening.)

* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

193 *Anthropological Methods* (3) Campbell
Approaches to library and field research in linguistics, archeology, and ethnography; conceptual bases and bias in the delineation of problems, in the selection, analysis and organization of data, and in the preparation of the final report. (1964–65 and alternate years.)

THIRD GROUP

261 *Cultural Origins of the New World* (3) Campbell
(1963–64 and alternate years: fall—as arranged.)

262 *Applied Anthropology* (3) Gallagher
(Formerly Sociology and Anthropology 155)
The use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (1964–65 and alternate years.)

263 *Culture, Contact, and Change* (3)
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact. (Not offered 1963–64.)

265 *Cultural Ecology* (3) Campbell
A cross-cultural examination of the relationship of technology to the natural world. (1964–65 and alternate years.)

285–86 *Research in Anthropology* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

289–90 *Thesis* (3–3) The Staff
(Academic year—as arranged; summer 1963.)

SPEECH

Professors L. P. Leggette *(Chairman)*, C. W. Pettit *(Director of Speech Clinic)*, G. F. Henigan, Jr. *(Director of Forensics)*, E. L. Stevens
Professorial Lecturers Zelda Fichandler, Edna Monsees
Associate Professor Lee Bielski
Associate Professorial Lecturers Zelda Kosh, W. J. Elsen, S. L. Berlinsky, Edwin Shutts, F. C. Strickland
Assistant Professor K. R. Sanders
Lecturers Edith Surrey, A. A. Nilles, H. C. Krebs, Lewis Shollenberger, Florence Lowndes
Associates Joan Regnell, Lois Richards, Ruth Cox

FIRST GROUP

A *Speech Clinic* Pettit, Bielski
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4. (Academic year—as arranged; summer 1963.)

B *American Speech for Foreign Students* (3) Bielski
Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic

Alphabet is used. Recording fee, $5. (Fall and spring—day and evening; summer 1963.)

1 *Effective Speaking* (3) Leggette and Staff
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2. (Fall and spring—day and evening; summer 1963.)

2 *Persuasive Speaking* (3) Henigan, Sanders
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion. (Fall—day; spring—day and evening.)

11 *Voice and Diction* (3) The Staff
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4. (Fall and spring—day and evening; summer 1963.)

32 *Oral Reading* (3) Leggette and Staff
Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11. Recording fee, $2. (Fall—day; spring—day and evening; summer 1963.)

SECOND GROUP

101 *Voice and Phonetics* (3) Bielski
The International Phonetic Alphabet and its applications to the student's own speech improvement; also its application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech 11. Recording fee, $4. (Fall—day; summer 1963.)

102 *Oral Interpretation of Literature* (3) Leggette
Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech 32. Recording fee, $2. (Spring—day.)

111 *Effective Speech Communication* (3) Elsen
The tools and principles of effective speech communication, including practice in the organization, delivery, and the evaluation of presentations commonly encountered by professional personnel. Not open to speech majors. (Not offered 1963–64.)

121 *Group Discussion and Conference Leadership* (3) Stevens
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. (Fall—day; spring—evening; summer 1963.)

126 *Public Discussion and Debate* (3) Henigan
Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor. (Spring—day.)

127–28 *Advanced Debate Practice* (1–1) Henigan
Admission by permission of the instructor, after one semester of satisfactory participation in the intercollegiate debate program. This course may be repeated for a total of 4 semester hours. (Academic year—as arranged.)

133–34 *Radio and TV Broadcasting* (3–3) Shollenberger
A study of the development of the radio and TV industries, station organization and management, equipment, production techniques; practice in the preparation and performance of radio programs. Recording fee, $5 a semester. (Academic year—evening.)

141 *Public Speaking: Advanced Forms* (3) — Henigan
The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Not offered 1963–64.)

145 *Speech Criticism* (3) — Henigan
A study of rhetorical theory with application to the criticism of representative American and British oratory. Admission by permission of the instructor. (Spring—day.)

153 *Acting* (3) — Leggette
Study and practice in the fundamentals of acting technique. Prerequisite: Speech 32. Laboratory fee, $5. (Fall—evening.)

154 *Play Production* (3) — Leggette
Fundamentals of play production. Under the supervision of the instructor, students prepare one-act plays for presentation. Laboratory fee, $5. (Spring—evening.)

155–56 *Play Production Practice* (1–1) — The Staff
Practical work in theater. (Academic year—as arranged.)

166 *History of the Theater* (3) — Nilles
A general survey of the rise of the theater, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. (Not offered 1963–64.)

169 *Creative Dramatics* (3) — Lowndes
A study of creative dramatics and its use as a learning tool. (Fall—evening.)

170 *Children's Theater* (3) — Lowndes
Theory and practice in creating and producing plays for children. (Spring—evening.)

171 *Introduction to Speech Correction* (3) — Pettit
A survey of the disorders of speech, including symptomatology, testing, causation, and therapy. (Fall—evening.)

174 *Speech Therapy* (3) — Bielski
Clinical techniques and procedures involved in the correction of the disorders of speech. Prerequisite: Speech 101 and 171. (Spring—day.)

176 *Speech Correction* (3) — Pettit
Advanced study of the disorders of speech. Prerequisite: Speech 171. (Spring—evening.)

177–78 *Clinical Practice in Speech Therapy* (1–1) — The Staff
Supervised case work in remedial speech—the University Speech Clinic, Children's Hospital, District of Columbia Crippled Children's Society, and Public School system. Weekly meetings to discuss therapeutic techniques for the common speech problems. This course may be repeated for a total of 4 semester hours. Prerequisite: Speech 101, 171, 174, and permission of the instructor. (Academic year—as arranged; summer 1963.)

182 *Hearing Problems and the Testing of Hearing* (3) — Shutts
A study of the field of audiology with emphasis on the testing of hearing. (Fall—evening.)

183–84 *Clinical Practice in Hearing Therapy* (1–1) — The Staff
Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and Children's Hospital. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182 and permission of the instructor. (Academic year—as arranged; summer 1963.)

THIRD GROUP

251 *Rehearsal and Performance* (3) — Arena Stage Staff
A course putting into practice the principles and techniques of acting through participation in play rehearsals and performances at the Arena Stage. Admission by audition or interview. (Fall and spring—as arranged.)

254 *Directing Problems* (3) Arena Stage Staff
Observation and participation in solving the problems involved in directing plays. Admission by interview. (Fall and spring—as arranged.)

255 *Techniques of Staging* (3) Arena Stage Staff
Application of theory and principles of scene design, costuming, lighting, make-up, and related stage techniques. Admission by interview. (Fall and spring—as arranged.)

263 *Theater Management* (3) Arena Stage Staff
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged.)

264 *Producing Problems* (3) Arena Stage Staff
Problems involved in producing community and professional theater. Admission by interview. (Fall and spring—as arranged.)

279 *Speech Science* (3) Berlinsky
The anatomy, physiology, physics, and psychology of speech production, with a survey of experimental work. (Not offered 1963–64.)

280 *Speech Pathology* (3) Pettit
An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Prerequisite: Speech 171 and 176. (Fall—day.)

284 *Speech Reading and Auditory Training* (3) Shutts
Theory and practice in speech reading and auditory training with an analysis of methods used for the instruction of hearing handicapped children and adults. Prerequisite: Speech 182. (Spring—evening.)

285 *Childhood Aphasia* (4) Monsees
Designed to acquaint speech therapists and teachers of exceptional children with the Association Method of rehabilitation; background lectures dealing with neurological, psychological, and psychiatric aspects of language disorders in children; current theories and practices in therapy. Observation and clinical practice with classes of aphasic children at the Children's Hospital School for Aphasic Children. Prerequisite: undergraduate degree in speech and hearing, special education, or allied fields. (Summer 1963.)

286 *Seminar in Speech Pathology* (3) Pettit
(Spring—evening.)

294 *Research in Dramatic Art* (arr.) The Staff
(Spring—as arranged.)

295–96 *Research in Speech and Hearing* (arr.) The Staff
(Academic year—as arranged; summer 1963.)

299–300 *Thesis* (3–3) The Staff
(Academic year—as arranged.)

RELATED COURSES IN OTHER DEPARTMENTS

Classical Languages and Literatures 71–72, *Greek and Roman Backgrounds in Literature* (3–3)
English 125, *Introduction to English Linguistics* (3)
English 135–36, *Shakespeare* (3–3)
English 175–76, *American Drama* (3–3)
English 183–84, *The English Drama* (3–3)
English 235–36, *Studies in Shakespeare and His Contemporaries* (3–3)
Education 134, *Student Teaching in Secondary Schools* (6 to 9)
Education 137, *Teaching Speech* (2 to 4)
Psychology 115, *Psychology of Language and Communication* (3)

STATISTICS

Professors E. H. Johnson, H. F. Bright *(Chairman)*, Solomon Kullback
Professorial Lecturers, Samuel Greenhouse, Seymour Geisser, Morton Kupperman
Associate Professorial Lecturers Arnold Heyl, W. M. Wolman
Assistant Professor R. E. Thomas
Lecturers S. J. Armore, Fred Frishman

FIRST GROUP*

51 *Introduction to Business and Economic Statistics* (3) — The Staff
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening; summer 1963.)

52 *Mathematics of Finance* (3) — The Staff
Lecture (3 hours). Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. (Fall and spring—day and evening.)

53 *Introduction to Statistics in Psychology and Education* (3) — The Staff
Lecture (2 hours), laboratory (2 hours). Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, frequency distributions, reliability and validity of tests, normal curve, correlation, elementary sampling, and an introduction to estimation and tests of hypotheses. Prerequisite: one entrance unit in algebra. Laboratory fee, $9. (Fall and spring—day and evening.)

91 *Principles of Statistical Methods*† (3) — The Staff
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, $9 (Fall—evening; spring—day.)

SECOND GROUP

104 *Statistics in Psychology and Education* (3) — Bright
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education. Laboratory fee, $9. (Fall—Saturday morning; summer 1963.)

105 *Statistics in Psychology and Education* (3) — Bright
Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, $9. (Spring—Saturday morning; summer 1963.)

106 *Factor Analysis* (3)
Matrix theory as applied to factor analysis, introduction to the concepts of factor analysis and their utility in various phases of research. Prerequisite: Statistics 105 or the equivalent. Laboratory fee, $9. (Fall—evening.)

* Of first-group courses, Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.
† Statistics 91 is for Statistics majors, for students in engineering and in the biological and physical sciences.

107 *Statistics for Engineers* (3) The Staff
Simple probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, nonparametric tests. Emphasis on engineering applications. Prerequisite: differential and integral calculus. (Fall and spring—evening; summer 1963.)

110 *Quality Control Techniques* (3)
Applications of probability and distribution theory to industrial control problems; use of quality control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor. (1964–65 and alternate years.)

111 *Business and Economic Statistics I* (3) Johnson
Statistical processes as related to the problems of business and economic research with emphasis on decision making under conditions of uncertainty. Topics include averages, dispersion, analysis of variance, correlation, quality control, and index numbers. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening.)

112 *Business and Economic Statistics II* (3) Johnson
Specific problems of business and economics with statistics as a tool of analysis. Introduction to principles and use of linear programming, game theory and queueing theory techniques. Study of various economic relationships, including demand, supply, cost and price functions. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening.)

117 *Analysis of Variance I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91. Laboratory fee, $9. (Fall—evening; summer 1963.)

118 *Correlation and the Chi-square Test I* (3) Thomas
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory: simple, partial, and multiple; nonparametric methods; analysis of covariance; contingency table analysis; tests of goodness of fit. Prerequisite: Statistics 91. Laboratory fee, $9. (Spring—evening.)

122 *Forecasting Principles and Techniques* (3) Johnson
Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values: budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent. (Spring—day.)

123 *Introduction to Econometrics* (3) Johnson
A basic quantitative approach to fundamental problems in economic theory involving the use of statistical processes, simple model construction, and probability considerations. Prerequisite: elementary course in Economics and Statistics. (Fall—day.)

155 *Introduction to Mathematical Probability* (3) The Staff
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: permission of instructor. (Fall—day; spring—evening; summer 1963.)

157–58 *Mathematical Statistics* (3–3) Kupperman
Distribution theory, sampling theory, estimation, hypothesis testing, confidence methods, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening.)

187 *Theory of Sampling* (3) Bright
Problems of sampling and sample design. Admission by permission of the instructor. (Fall—evening.)

188 *Nonparametric Statistical Inference* (3) Bright
Statistical inference when the form of the underlying distribution is unknown, sign tests, rank order statistics, theory of runs, nonparametric discriminant analysis. (Spring—evening.)

189–90 *Mathematical Probability and Applications* (3–3) Geisser
Combinatorial analysis, conditional probability and stochastic independence, probability distributions, laws of large numbers, recurrent events, random walks, Markov chains, simple time-dependent stochastic processes. Prerequisite: Statistics 155 or permission of instructor. (Academic year—evening.)

193 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of real variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Spring—evening.)

194 *Statistical Mathematics** (3) The Staff
Problems in statistics with the development of complex variable theory necessary for their solution. Prerequisite: differential and integral calculus. (Fall—evening.)

195–96 *Reading and Research in Statistics* (arr.) The Staff
(Academic year—as arranged.)

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3) The Staff
In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor. (Not offered 1963–64.)

THIRD GROUP*

207–8 *Operations Analysis* (3–3) Bright
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. Admission by permission of the instructor. (1964–65 and alternate years.)

217–18 *Experimental Design* (3–3)
Advanced theory of the applications of the linear and other hypotheses to experimental design. (Academic year—evening.)

257–58 *Advanced Mathematical Statistics I* (3–3) Greenhouse
Distribution functions, sequences of random variables, characteristic functions, sampling theory, linear statistical estimation. (Academic year—evening.)

259–60 *Advanced Mathematical Probability* (3–3) Kullback
Modern theories and asymptotic laws: elementary theory of definite integration; limit theorems in probability. (Academic year—evening.)

261–62 *Information Theory for Engineers* (3–3)
The elements of information theory and its statistical and probabilistic background from an elementary point of view (nonmeasure-theoretic). Measures of information, entropy, and their properties. Discrete stochastic sources, message ensembles. The transmission of information, channels, channel capacity. Encoding and decoding including error detection and correction. The fundamental theorems of information theory. (1964–65 and alternate years.)

263–64 *Advanced Mathematical Statistics II* (3–3) Kupperman
Statistical estimation, tests of hypotheses, sequential analysis, statistical decision functions, time series, multivariate statistical theory. (Academic year—evening.)

* Mathematics 124 and Statistics 193 and 194, or the equivalent, are prerequisite to all third-group courses.

265–66 *Multivariate Analysis* (3–3) Geisser
A year course, credit is not given for the first half until the second half is completed. Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis. (Academic year—evening.)

267–68 *Characteristic Functions* (3–3)
A year course, credit is not given for the first half until the second half is completed. Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics. (1964–65 and alternate years.)

269 *Sequential Testing* (3)
(1964–65 and every third year.)

270 *Statistical Decision Theory* (3)
(1964–65 and every third year.) Kullback

271–72 *Statistical Information Theory* (3–3)
A year course, credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison or experiments. (Academic year—evening.)

273–74 *Stochastic Processes* (3–3) Kullback
A year course, credit is not given for the first half until the second half is completed. Fundamental notions of stochastic processes; random walks; Markov processes; differential processes; Gaussian processes; applications. (1964–65 and alternate years.)

295–96 *Reading and Research* (3–3) The Staff
Admission by permission of the instructor. (Academic year—as arranged.)

297 *Seminar: Problems in Mathematical Statistics* (3)
(1963–64—as arranged.) The Staff

299–300 *Thesis* (3–3)

ZOOLOGY

Professors I. B. Hansen *(Chairman)*, Edith Mortensen, S. C. Munson, A. H. Desmond
Professorial Lecturer K. C. Kates
Assistant Professor B. J. Leach
Lecturer J. R. Buchheit

BIOLOGY*

FIRST GROUP

1–2 *Introductory Biology**† (4–4) The Staff
An interdepartmental course. Lecture (2 hours), laboratory (4 hours). This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

† Biology 1-2 is prerequisite to all second-group courses in Zoology, except by permission of the instructor.

biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2 at the beginning of the academic year, depending on laboratory space available. Material fee, $10 a semester. (*Biology 1—Plant Sciences* (4): fall and spring—day and evening; summer 1963. *Biology 2—Animal Sciences* (4): fall and spring—day and evening; summer 1963.)

ZOOLOGY

SECOND GROUP

101–2 *Invertebrate Zoology* (3–3) Mortensen
Lecture (1 hour), laboratory (4 hours). A systematic study of invertebrate forms, including the morphology, classifications, life histories, and phylogenetic relationships. Material fee, $8 a semester. (1963–64 and 1964–65: academic year—day; 1965–66: academic year—evening.

103–4 *Comparative Vertebrate Anatomy* (3–3)
Lecture (1 hour), laboratory (4 hours). Lectures on the organ systems of the vertebrates, laboratory dissections of types. Material fee, $11 a semester. (1963–64: academic year—day; 1964–65: academic year—day and evening.)

108 *Organic Evolution** (3) Munson
Theories of organic evolution and present ideas on the principle lines of development in the plant and animal kingdoms; review of the contributions to an understanding of the mechanisms involved in this process. (1963–64: academic year—day; 1964–65: academic year—evening.)

115–16 *Cytology** (3–3) Desmond
Lecture (1 hour), laboratory (4 hours). The morphological and physiochemical properties of plant and animal cells and their components. Preparation of material for study. Material fee, $11 a semester. (1963–64 and alternate years: academic year—day; 1964–65 and alternate years: academic year—evening.)

127 *Genetics** (3) Stewart
A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. (Fall—evening.)

140 *Cell Physiology** (3) Shropshire
The fundamental physiology of protoplasm. Prerequisite: Chemistry 12. (Spring—evening; summer 1963.)

145 *Introduction to Vertebrate Embryology* (3) Hansen
Lecture (1 hour), laboratory (4 hours.) Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, $11. (1963–64 and alternate years: fall—day and evening; 1964–65 and alternate years: fall—day.)

148 *Histology* (3) Desmond
Lecture (1 hour), laboratory (4 hours). Introduction to the microscopical anatomy of normal tissues and organs. Material fee, $11. (1963–64 and alternate years: spring—evening; 1964–65 and alternate years: spring—day; summer 1963.)

152 *Protozoa* (3) Mortensen
Lecture (1 hour), laboratory (4 hours). Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Material fee, $8. (1963–64 and alternate years: spring—evening.)

155 *Parasitology* (3) Kates
Lecture (1 hours), laboratory (4 hours). An introduction to the study of animal parasitology, with a survey of parasitic types from the protozoa through arthropods. Material fee, $11. (1963–64 and alternate years: fall—evening.)

* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

Leach

157 *Comparative Endocrinolgy* (3)
(Fall—day.)

Munson

161 *Entomology* (3)
Lecture (1 hour), laboratory (4 hours). A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Material fee, $8. (1963–64 and alternate years: fall—evening.)

Munson

162 *Insect Physiology* (3)
Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, $11. (1963–64 and alternate years: spring—evening.)

The Staff

171–72 *Special Problems* (3–3)
Written approval of the instructor is required. Material fee, $11 a semester. (Academic year—as arranged.)

The Staff

199–200 *Proseminar* (3–3)
Designed to correlate and supplement the work of Zoology majors. (Academic year—day and evening.)

THIRD GROUP

201–2 *Seminar: Cytology** (3–3)
A study of the current literature in experimental cytology. (Not offered 1963–64.)

Mortensen

204 *Seminar in Invertebrate Zoology* (3)
A study of original publications on hormones of invertebrate animals. (1964–65 and alternate years.)

Mortensen

214 *Advanced Invertebrate Zoology* (3)
Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 101–2 or the equivalent. Material fee, $8. (Not offered 1963–64.)

Hansen

247–48 *Morphogenesis* (3–3)
Lectures and class reports on experimental morphology. Prerequisite: Zoology 103–4 or the equivalent. (1964–65 and alternate years.)

Desmond

251 *Seminar in Vertebrate Zoology* (3)
A study of current publications in the field of histophysiology. (1963–64 and alternate years: fall—evening.)

The Staff

295–96 *Research* (arr.)
Investigation of special problems. (Academic year—as arranged; summer 1963—Zoology 295 (3).)

The Staff

299–300 *Thesis* (3–3)
(Academic year—as arranged; summer 1963—Zoology 299 (3).)

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* An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), Master of International Affairs (M.I.A.), and Master of Public Administration (M.P.A.)

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

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Fellowships, Scholarships, Prizes, Financial Aid	Chairman, Committee on Scholarships
General Catalogue of the University	Director of Admissions
Graduate Council	Dean of the Graduate Council
Law School and Graduate School of Public Law	Director of Admissions
School of Education	Director of Admissions
School of Engineering and Applied Science	Dean of the School
School of Government, Business, and International Affairs	Director of Admissions
School of Medicine	Admissions Office, School of Medicine
Summer Sessions	Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters	Registrar
Schedule of Classes: Summer Sessions	Dean of the Summer Sessions

THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF PHARMACY, 1906

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

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THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AIR SCIENCE, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898

The George Washington University

Bulletin



THE SCHOOL OF EDUCATION

1963-64

WASHINGTON 6, D. C.
JUNE 1963
Vol. LXII No. 13

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Director of Admissions, The George Washington University, Washington 6, D. C.

Information concerning courses of instruction and the programs of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on the inside back cover.

Admission ..... Director of Admissions, Building C

School of Medicine ..... 1339 H Street NW.

Air Science (ROTC) ..... Director of Air Science, Chapin Hall

Alumni Association ..... Alumni Office, Bacon Hall

Medical Alumni Association ..... 1335 H Street NW.

Foreign Students ..... Adviser to Foreign Students, Building T

Graduate Study

In Arts and Sciences

Master's degrees ..... Dean of Columbian College of Arts and Sciences

Doctor of Philosophy ..... Dean of The Graduate Council

In Education ..... Dean of The School of Education

In Engineering or Applied Science ..... Dean of The School of Engineering and Applied Science

In Law ..... Dean of The Graduate School of Public Law

In Accounting, Business Administration, Business and Economic Statistics, Economic Policy, Health Care (including Hospital) Administration, International Affairs, Personnel Administration, Public Administration, Public Affairs ..... Dean of The School of Government, Business, and International Affairs

Housing

Men ..... Dean of Men, Building Q

Women ..... Dean of Women, Woodhull House

Scholarships ..... Chairman, Committee on Scholarships, Building T

Student Employment ..... Student Placement Office, 2114 G Street NW.

Summer Sessions ..... Dean of the Summer Sessions, Building T

Transcripts of Records ..... Registrar, Building C

Veterans Education ..... Director of Veterans Education, Building Q

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The George Washington University

Bulletin

THE SCHOOL OF EDUCATION
1963-64

VOLUME LXII JUNE 1963 NUMBER 13


THE
GEORGE WASHINGTON
UNIVERSITY
Union Station
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Folger Shakespeare Library
THE CAPITOL
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Treasury Dept
Archives Bldg
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Voice of America
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Dept of State
Pan American Union
Washington Monument
Dept of Agriculture
Nat Academy of Science
Lincoln Memorial
TIDAL BASIN
POTOMAC RIVER
N

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1963

July

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August

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September

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August

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September

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October

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November

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December

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THE CALENDAR 1963-64

FALL SEMESTER:

Orientation Assembly: all new students	Sept 13	Fri
Curriculum assemblies: new students attend one	Sept 13 and 16	Fri and Mon
Placement tests	Sept 16	Mon
Advising	Sept 16–18	Mon–Wed
Registration	Sept 19–21*	Thurs–Sat
Application for Feb graduation due in Registrar's Offices		
Classes begin	Sept 23	Mon
Subjects of Master's theses of Feb candidates due	Oct 4	Fri
Dissertation subjects of June Ed.D. candidates due	Oct 4	Fri
Application for Nov Ed.D. comprehensive examinations due	Oct 19	Sat
General Education activities plans due from A.B. in Ed. Feb entrants	Oct 21	Mon
Graduate Studies Committee meets	Nov 1	Fri
Veterans Day (holiday)	Nov 11	Mon
Ed.D. comprehensive examinations	Nov 16	Sat
Thanksgiving recess	Nov 28–30	Thurs–Sat
Ed.D. dissertations of Feb candidates due	Dec 2	Mon
Ed.D. and A.M. in Ed. Jan comprehensive examination applications due	Dec 4	Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed
Classes resume	Jan 2	Thurs
Theses of Feb candidates due	Jan 2	Thurs
Ed.D. and A.M. in Ed. comprehensive examinations	Jan 11	Sat
Last day of fall-semester classes	Jan 15	Wed
Graduate Studies Committee meets	Jan 17	Fri
Examination period	Jan 20–25	Mon–Sat

SPRING SEMESTER:

Advising: new students	Jan 20–29	Mon–Wed
Registration	Jan 30–Feb 1*	Thurs–Sat
Application for June graduation due in Registrar's Offices		
Spring-semester classes begin	Feb 3	Mon
Subjects of Master's theses of June candidates due	Feb 7	Fri
National Teacher Examinations	Feb 15	Sat

* Thursday and Friday from 12:00 to 8:00 P.M.; Saturday from 10:00 A.M. to 1:00 P.M.

Winter Convocation (holiday)	Feb 22	Sat
General education activities plans due from A.B. in Ed. June entrants	March 2	Mon
Spring recess	March 23–28	Mon-Sat
Dissertation subjects of Feb 1965 Ed.D. candidates due	March 28	Sat
Ed.D. and A.M. in Ed. April comprehensive examination applications due	March 28	Sat
Application for 1964–65 scholarships due	April 1	Wed
Ed.D. dissertations of June candidates due	April 1	Wed
Ed.D. and A.M. in Ed. comprehensive examinations	April 25	Sat
Master's theses of June candidates due	May 1	Fri
Graduate Studies Committee meets	May 8	Fri
Last day of spring-semester classes	May 20	Wed
Examination period	May 23–29	Sat–Fri
Memorial Day (holiday)	May 30	Sat
Baccalaureate service	June 7	Sun
Commencement	June 7	Sun

SUMMER SESSIONS:

Nine-week workshop session: 1st-block registration	June 15	Mon
Eight-week session: registration	June 15	Mon
Nine-week workshop session: 1st-block classes begin	June 16	Tues
Eight-week classes begin	June 16	Tues
Independence Day (holiday)	July 4	Sat
Nine-week workshop session: 2d-block registration	July 6	Mon
Six-week session: registration	July 6	Mon
Nine-week session: 2d-block classes begin	July 7	Tues
Six-week session: classes begin	July 7	Tues
Ed.D. and A.M. in Ed. July comprehensive examination applications due	July 8	Wed
Ed.D. and A.M. in Ed. comprehensive examinations	July 22	Wed
Nine-week session: 3d-block registration and first day of classes	July 27	Mon
Graduate Studies Committee meets	Aug 5	Wed
Eight-week session ends	Aug 7	Fri
Nine-week and six-week sessions end	Aug 14	Fri

REGISTRATION FOR FALL SEMESTER 1964–65	Sept 17–19	Thurs–Sat

THE SCHOOL OF EDUCATION

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education. In addition to programs of study leading to the degrees, the School offers nondegree programs for certification.

Special curricula are provided for liberal arts graduates, housewives, and retired military personnel who wish to prepare for teaching. The School also provides a wide range of courses of interest to emergency teachers who wish to qualify for teaching certificates and teachers who wish to renew licenses.

Laboratory and clinical facilities are provided by the University Reading and Speech clinics. In cooperation with public and private schools and a wide variety of social agencies, ample opportunity for field experience is provided.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

HISTORICAL DEVELOPMENT

The University began offering professional courses for teachers in 1904–5 and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College which, in its early years, was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education and greater provision was made for advanced study. Since that time the graduate enrollment has steadily increased with the result that today the School has a considerably larger number of graduate than undergraduate students.

ADVANTAGES OF STUDY IN THE NATION'S CAPITAL

Washington is rich in the resources needed by teachers, counselors, and administrators to supplement classroom instruction. In addition to the library facilities of the University, the Library of Congress; the Library of the Department of Health, Education, and Welfare; and many special collections provide unexcelled opportunities for reading and research. The operation of all branches of the National Government may be observed. Among the art galleries are the National Gallery of Art, the Corcoran Gallery of Art, the Freer Art Gallery, Phillips Memorial Gal-

lery, and the National Museum. The music calendar of Washington is a full one, and includes concerts by the National Symphony Orchestra, Philadelphia Orchestra, and the Boston Symphony Orchestra. Those interested in science find many resources for study at the National Museum, the National Zoological Park, the United States Botanic Garden, and the Aquarium of the Fish and Wildlife Service, Department of the Interior. Students have unique opportunities to become acquainted with the work of the Office of Education, the National Education Association, the American Council on Education and many other national organizations with headquarters in Washington.

ACADEMIC STATUS

The George Washington University is accredited by the regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Education is accredited by the National Council for Accreditation of Teacher Education, is a member of the American Association of Colleges for Teacher Education, and was a charter member of the National Association of Colleges and Departments of Education prior to the merger of that association with others to form the American Association of Colleges for Teacher Education.

EDUCATION FOR TEACHING

Programs of study in education for teaching are based upon the assumption that every teacher should have a broad general education, adequate mastery of the content of instruction, and professional competence.

The relative emphasis placed upon each of these aspects of the total education for teaching varies in accordance with the purposes of each program. For instance, elementary school teachers, since they teach all subjects, require content preparation of greater breadth and less specialization than secondary school teachers.

It is the view of the School of Education that an acceptable minimum education for teaching requires not less than four years of full-time study or the equivalent part-time study. For superior preparation teachers are urged to plan for five years of full-time study or the equivalent part-time study.

The student may choose any one of the following three plans to achieve superior educational preparation for teaching:

1. Upon receiving the Bachelor's degree, he may take a teaching position and, after acquiring some professional experience, return to the School for graduate study leading to the Master's degree. This plan enables students with Bachelor's degrees to start earning immediately and, by teaching experience, to illuminate graduate study which will follow. However, by delaying acquisition of the Master's degree the student cannot command the higher salary usually associated with this degree and may prejudice his opportunity for promotion.

2. The student may choose to pursue full-time graduate study leading to the Master's degree immediately after receiving the Bachelor's degree. This plan is of advantage to students who wish to defer the decision to seek a Master's degree

until completion of the undergraduate program and to students transferring from other institutions, whose transferred credits fit more readily into this plan than into the five-year plan discussed below. Both this program and the five-year program enable the student to command a higher beginning salary and be considered for early promotion.

3. For those whose professional aims are established at the beginning of the junior year, the School offers a five-year integrated program of study leading to the Bachelor's and Master's degrees conferred simultaneously. This program permits careful planning from the outset to meet the demands of the teaching position for which the student is preparing; it permits adequate mastery of the content of instruction in two teaching fields; and advances the professional sequence of courses to the fourth and fifth years, thus providing a more adequate academic preparation. Students are advised to choose the five-year program if possible.

The first two years of all programs of study are administered by Columbian College of Arts and Sciences of the University. During these two college years the student is encouraged to follow the curriculum designed to prepare him for the program of studies he wishes to pursue later in the School of Education. Students who have followed other curricula may be admitted to the School of Education with deficiencies which they must make up before graduation. Members of the Faculty of the School of Education serve as advisers to students enrolled in Columbian College of Arts and Sciences curricula leading to degree programs in the School of Education. At each registration students must have their programs approved by their advisers. They are also urged to seek counsel in the budgeting of time for the inclusion of nonacademic student activities and off-campus cultural opportunities for the development of a well-rounded personality.

The Bachelor's Degrees

Bachelor of Science in Physical Education*

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR MEN

There are three curricula leading to this degree. The curriculum in Physical Education with an academic Minor is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The curriculum in Physical and Health Education prepares for the teaching of physical education in the larger schools. The curriculum in Physical Education and Recreation is planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

PREREQUISITE

The following two-year curriculum offered in the lower division of Columbian College of Arts and Sciences, is required for admission to the School of Education as a candidate for the degree of Bachelor of Science in Physical Education for Men.

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* Physical Education may also be chosen as a minor teaching field by candidates for the degree of Bachelor of Arts in Education. See page 21.

		Semester Hours
English	English 1 or 1X, 2	6
Science	Biology 1–2* (freshman year)	8
	Chemistry 3–4 (sophomore year)	8
Social Studies	History 71–72; Political Science 1 and 9, 1 and 10, or 9–10	6
	Anthropology 1 and Sociology 2	6
Major Prerequisites	Physical Education 41, 43–44, 47; Speech 1 or 11 (freshman year)	10
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (sophomore year)	18
		2
Elective		64
	Total	

CURRICULUM REQUIREMENTS

The minimum requirements for this degree are 66 semester hours, distributed as follows:

Curriculum in Physical Education With an Academic Minor

Junior Year

Education 108	Human Development, Learning, and Teaching	3
Education 123	Society and the School	3
Physical Education 105	Adapted Physical Education and Physical Examinations	3
Physical Education 107	Teaching Recreational Dance	1
Physical Education 113–14	Practice in Teaching Physical Education	4
Physical Education 121	School and Community Health Programs	3
Physical Education 122	Methods and Materials for Health Education	3
Physiology 115	Introduction to Human Physiology	4
Academic Teaching Field		6
Elective		33
	Total	

Senior Year

Education 131	Principles and Methods of Secondary School Teaching	3
Education 134	Student Teaching in Secondary Schools	6–9
Physical Education 103	History and Principles of Physical Education	3
Physical Education 115–16	Teaching Team Sports in Secondary Schools	4
Physical Education 131	Tests and Measurements in Physical Education	3
Physical Education 138	Organization and Administration of Physical Education	3
Academic Teaching Field		8–11
	Total	30–36

Curriculum in Physical and Health Education

Junior Year

Education 108	Human Development, Learning, and Teaching	3
Education 123	Society and the School	3
Physical Education 107	Teaching Recreational Dance	1
Physical Education 109–10	Leadership Organization in the Intramural Program	4

* An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

		Semester Hours
Physical Education 113–14	Practice in Teaching Physical Education	4
Physical Education 121	School and Community Health Programs	3
Physical Education 122	Methods and Materials for Health Education	3
Physiology 115	Introduction to Human Physiology	3
Elective		9
	Total	33

Senior Year

Education 131	Principles and Methods of Secondary School Teaching	3
Education 134	Student Teaching in Secondary Schools	6–9
Physical Education 103	History and Principles of Physical Education	3
Physical Education 105	Adapted Physical Education and Physical Examinations	3
Physical Education 115–16	Teaching Team Sports in Secondary Schools	4
Physical Education 131	Tests and Measurements in Physical Education	3
Physical Education 138	Organization and Administration of Physical Education	3
Elective		5–8
	Total	30–36

CURRICULUM IN PHYSICAL EDUCATION AND RECREATION

Junior Year

Education 108	Human Development, Learning, and Teaching	3
Education 123	Society and the School	3
Physical Education 48	Introduction to Recreation	2
Physical Education 107	Teaching Recreational Dance	1
Physical Education 109–10	Leadership Organization in the Intramural Program	4
Physical Education 113–14	Practice in Teaching Physical Education	4
Physical Education 121	School and Community Health Programs	3
Physical Education 132	Camp Leadership	1
Physical Education 151–52	Recreational Leadership Activities	6
Elective		6
	Total	33

Senior Year

Education 131	Principles and Methods of Secondary School Teaching	3
Education 134	Student Teaching in Secondary Schools	6–9
Physical Education 103	History and Principles of Physical Education	3
Physical Education 122	Methods and Materials for Health Education	3
Physical Education 131	Tests and Measurements in Physical Education	3
Physical Education 138	Organization and Administration of Physical Education	3
Physical Education 161	Community Organization for Recreation	3
Physical Education 162	Administration of Community Recreation Programs	3
Elective		3–6
	Total	30–36

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR WOMEN

The Physical Education major curriculum is designed to prepare students for teaching in elementary and secondary school programs of physical education. Within this curriculum there is opportunity for specialization in dance, corrective physical education, health education, and recreation.

The student wishing to prepare to teach another subject in addition to physical education may do so by using her elective hours to work toward a minor teaching field. Relevant work completed in Columbian College of Arts and Sciences may be counted.

PREREQUISITE

The following two-year curriculum, offered in the lower division of Columbian College of Arts and Sciences, prepares for the Bachelor of Science in Physical Education curriculum in the School of Education.

		Semester Hours
English	English 1 or 1X, 2	6
	English 51–52, 71–72, or 91–92	6
Science	Biology 1–2*	8
	Chemistry 3–4	8
Social Studies	History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9–10; or Anthropology 1 and Sociology 2	6 4–6
Major Prerequisites	Physical Education 43–44	6
	Physical Education 49, 50	4–6
	Physical Education 51–52	6
	Psychology 1, 22	6–10
Academic Electives		64
Total		

Junior Year

Education 108	Human Development, Learning, and Teaching	3
Education 123	Society and the School	3
Physical Education 105–6	Adapted Physical Education and Physical Examinations	6
Physical Education 107	Teaching Recreational Dance	1
Physical Education 111–12	Teaching Physical Education Activities	4
Physical Education 117	Teaching Modern Dance	1
Physical Education 118	Dance Production	1
Physical Education 121	School and Community Health Programs	3
Physical Education 122	Methods and Materials for Health Education	3
Physical Education 132	Camp Leadership	1
Physiology 115	Introduction to Human Physiology	3
Elective or minor teaching field		5
Total		34

Senior Year

Education 131	Principles and Methods of Secondary School Teaching	3
Education 134	Student Teaching in Secondary Schools	6–9
Physical Education 101	Physical Education in the Elementary School	3
Physical Education 103	History and Principles of Physical Education	3
Physical Education 113	Practice in Teaching Physical Education Activities	3
Physical Education 131	Tests and Measurements in Physical Education	3
Physical Education 138	Organization and Administration of Physical Education	5–8
Elective or minor teaching field		2–5
Total		32–35

* An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

Bachelor of Arts in Education

The objective of programs leading to the degree of Bachelor of Arts in Education is to provide (1) general educational backgrounds; (2) functional command of ideas, concepts, knowledge, and skills in one or more teaching fields; (3) mastery of basic professional information and skills adequate for the beginning teacher; and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of semester hours. None require less than 126 semester hours of satisfactory work, exclusive of required Physical Education.

Normally, from 60 to 64 semester hours of the total requirement are completed in Columbian College of Arts and Sciences of the University or in an equivalent institution elsewhere.

GENERAL EDUCATION

The general educational backgrounds needed by prospective teachers are obtained through: (1) precollege education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

College course requirements of the pre-Education curriculum.—Course requirements depend in part upon the senior high school credits presented for college admission. They are as follows:

English

	Semester Hours
English 1 or 1X, 2: English Composition Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English Composition course; those who are inadequately prepared are assigned to English 1X. English 1 or 1X is a prerequisite to all other courses in English.	6
One of the following survey courses in literature English 51–52: Introduction to English Literature English 71–72: Introduction to American Literature English 91–92: Introduction to European Literature	6

Foreign Languages

French, German, Latin, Russian, or Spanish A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language. If he offers three units, he must complete the second semester of the second-year college course in the same language. If he offers two units, he must complete the entire second-year college course in the same language. If he offers one unit, he must complete the second semester of the first-year college course and the second-year course in the same language.	12

Physical Education

Physical Education 1–2 and 11–12 A student may be exempted from this requirement if registered for less than three courses or regularly employed during the day.	4

Science

	Semester Hours
Three semesters (two in biological science and one in physical science or vice versa) to supplement senior high school courses in these fields and chosen from the following	9–12
Biology 1–2: Survey in Biology*	
Chemistry 3–4: Fundamentals of Physical Sciences	
Chemistry 11–12: General Chemistry	
Geology 1–2: Introductory Geology	
Physics 11, 12: Introductory Physics	

(A student offering for admission two or more acceptable senior high school units in the above areas of science may be exempted from one semester of this requirement.)

Mathematics

Two semesters to supplement senior high school courses chosen from the following	6
Mathematics 3: College Algebra	
Mathematics 6: Plane Trigonometry	
Mathematics 9: General Mathematics I	
Mathematics 10: General Mathematics II	

Social Studies

History 71–72: The Development of the Civilization of the United States or	6
Political Science 1 and 9, 1 and 10, or 9–10	6
Another Social Science chosen from the following courses	
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
History 39–40: The Development of European Civilization	
History 71–72: The Development of the Civilization of the United States	
Political Science 1 and 9, 1 and 10, or 9–10: Introduction to Government; Government of the United States	
Religion 59–60: History of Religion	
Anthropology 1: Man, Culture, and Society I	
Sociology 2: Man, Culture, and Society II	

(A student offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from this requirement.)

Other Courses

Psychology 1: General Psychology	3
Psychology 22: Educational Psychology	3
Speech 1: Effective Speaking (or 11: Voice and Diction, if the Department so advises)	3

Students who demonstrate marked superiority in Speech may be exempted from this requirement. Such exemption is granted only on the recommendation of the Department of Speech.

Academic Electives

Electives may be selected in lieu of the various exemptions	64–67
Minimum required credits	

* An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

Work experience, leadership activities, participation in student campus activities, and the utilization of off-campus cultural opportunities.—Obviously, these cannot be prescribed. Nevertheless, they constitute an important part of the general educational background of prospective teachers. In conference with a staff member of the Department of Education assigned as his general adviser, the student is expected to plan adequate experiences in these areas. Not later than one month after matriculation in the School of Education the student must file in the Office of the Dean a statement of such plans approved by his adviser. He must also keep his adviser informed concerning the fulfillment of his plans and to this end include in plans filed, scheduled conferences with his adviser.

Success of the student in enriching his general educational background by these means will be taken into consideration at the end of the first semester of the junior year when the faculty will review the qualifications of candidates to determine any who are not of sufficient promise as prospective teachers to warrant continuation of their candidacies. Success in these activities will also be considered when the list of candidates is again reviewed early in the last semester of the senior year immediately after the results of the National Teacher Examinations are available. In estimating the success of the student in this connection, more weight will be given to evidence of initiative, eagerness to make the most of each experience, balance, and quality of experience than to the number of different experiences.

Although the student is not required to establish a program of nonacademic activities until he becomes a degree candidate in the School of Education, he is advised to do so as soon as he enters the University. To this end, he should consult the pre-Education adviser soon after entering. Whatever is accomplished in this connection while in Columbian College of Arts and Sciences will reduce the obligations of the student after admission to the School of Education.

TEACHING-FIELD PREPARATION

Teaching-field preparation depends upon the kind of teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools, as a rule, must demonstrate competency in a major teaching field and a minor teaching field. With the approval of the student's adviser, preparation in a minor teaching field may be omitted in order to permit additional study in the major teaching field. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field.

The student should begin teaching-field preparation while in the lower division of Columbian College of Arts and Sciences and should make provision for it in planning his program of studies.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations,* and satisfactory completion of the prescribed special methods courses.

* Special field examinations of the National Teacher Examinations are available in elementary education; early childhood education; biology and general science; English language and literature; industrial arts; mathematics; chemistry; physics; and general science; social studies; physical education; business education; music education; home economics; and art education.

Students preparing to teach history or geography take the special field examination in social studies.

Students preparing to teach in fields in which special field examinations are not available (language and special) must obtain a satisfactory score on a special field examination given by the instructor in the special methods course involved.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. They are determined in conference with an adviser. Students preparing to teach on the elementary level are advised to use free electives to increase their mastery of content in an academic field or an area of specialization, e.g.—Physical Education, etc.

The prescribed course in special methods is concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of the teaching field. It attempts to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the course reviews the teaching-field content currently in use in schools and the examination at the end of the course provides the final test of competency in the teaching field.

PRESCRIBED COURSES IN THE VARIOUS TEACHING FIELDS

Art

	Semester Hours
Art 1: Art Appreciation	3
Art 31–32: Survey of Western Art	6
or Art 71–72: Introduction to the Arts in America	9
Nine semester hours from the following:	
Art 101: Greek and Roman Architecture	
or Art 102: Greek and Roman Sculpture	
Art 103: Medieval Art	
Art 104: Renaissance Art in Italy I	
or Art 105: Renaissance in Italy II	
Art 106: Renaissance Art in the North	
Art 109: Nineteenth Century Art in Europe	
Art 110: Contemporary Art	
Art 112: Art of Egypt and the Ancient Orient	
Art 113: Baroque Art in Italy	
or Art 114: Baroque Art in the North	
Art 120: Art of China and Japan	
Art 143: Folk Arts in America	
Art 203: Primitive Art	24
Twenty-four semester hours from the following:	
Art 21–22: Basic Design and Composition*	
Art 35–36: Commercial Art I	
Art 41–42: Drawing and Perspective	
Art 51–52: Ceramics I	
Art 65–66: Drawing and Painting I—Life, Still Life, and Portrait	
Art 81–82: Sculpture I	
Art 125–26: Drawing and Painting II—Life, Still Life, and Portrait	
Art 127–28: Drawing and Painting III—Life and Portrait†	
Art 131–32: Ceramics II	
Art 151–52: Ceramics III	
Art 157–58: Graphics	
Art 159–60: Anatomy and Techniques	
Art 175–76: Advanced Design and Composition	
Art 179–80: Sculpture II†	
Art 183–84: Commercial Art II	36
Total	

* Prerequisite to all work in studio practice.
† May be repeated for credit with the approval of the Department.

Biology

	Semester Hours
Biology 1–2*: Introductory Biology	8
Botany or Zoology 108*: Organic Evolution or Botany or Zoology 127*: Genetics	3
Botany: (Advanced courses as approved by the adviser)	6
Chemistry 11–12: General Chemistry	8
Physiology 115: Introduction to Human Physiology	3
Physics 11, 12: Introductory Physics	6
Zoology 101–2: Invertebrate Zoology	6
Zoology 103–4: Comparative Vertebrate Anatomy	6
Total	46

Business Education

Accounting 1: Introductory Accounting	3
Economics 1–2: Principles of Economics	6
Secretarial Studies 51: Business Correspondence	3
Additional courses, as prescribed, in *one* of the following groups:	

Group 1—Secretarial Studies†

Secretarial Studies 2: Intermediate Typewriting	3
Secretarial Studies 12: Intermediate Shorthand and Transcription	3
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription	3
Secretarial Studies 54: Secretarial Practice	3
‡Additional courses from the following, as approved by the adviser	6
Accounting 2: Introductory Accounting	
Business Administration 101: Introduction to Business	
Business Administration 109: Office Management	
Business Administration 141: Basic Marketing	
Business Administration 161: Commercial Law: Contracts, Sales, Agency, and Bailments	
Economics 121: Money and Banking	
Statistics 52: Mathematics of Finance	
Total	30

Group 2—Bookkeeping, Business Arithmetic, and Business Law

Accounting 2: Introductory Accounting	3
Accounting 111: Financial Statement Analysis or Accounting 121: Intermediate Accounting	3
Business Administration 101: Introduction to Business	3
Business Administration 102: Fundamentals of Management	3
Business Administration 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
Business Administration 162: Commercial Law: Negotiable Instruments, Property, Mortgages	3
Statistics 52: Mathematics of Finance	3
‡Three semester hours from the following, as approved by the adviser	3
Business Administration 121: Risk Management	
Business Administration 131: Business Finance	

* An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

† Candidates inadequately prepared for Secretarial Studies 2 or 12 may be required to take Secretarial Studies 1 or 11. In such cases, with the approval of the adviser, credit earned for Secretarial Studies 1 or 11 may be substituted for a teaching field elective.

‡ Not required for the minor teaching field.

	Semester Hours
Business Administration 138: Investments	
Economics 121: Money and Banking	
	36
Total	

Group 3—Distributive Education

Business Administration 141: Basic Marketing	3
Business Administration 142: Marketing Management Problems	3
Business Administration 145: Sales Management	3
*Twelve semester hours from the following, as approved by the adviser	12
Business Administration 147: Advertising	
Business Administration 150: Procurement and Materials Management	
Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	
Business Administration 176: Exporting and Importing	
Total	33

Chemistry

Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Chemistry 22: Quantitative Inorganic Analysis I	4
Chemistry 151–52: Organic Chemistry	8
Chemistry 191: History of Chemistry	2
Mathematics 6: Plane Trigonometry	3
Mathematics 21: Calculus I	3
Physics 11, 12, 13: Introductory Physics	9
Total	41

Elementary Education

Education 113: Elementary School Art	3
Education 114: Elementary School Music	3
Geography 51, 52: Introduction to Geography, World Regions	6
History 71–72: Development of the Civilization of the United States	6
Mathematics 9: General Mathematics I	3
Mathematics 10: General Mathematics II	3
Physical Education 101: Physical Education in Elementary School	3
Science, as approved by adviser	9–12
Six semester hours from the following, as approved by the adviser	6
Economics 1–2: Principles of Economics	
History 39–40: Development of European Civilization	
Political Science 9–10: Government of the United States	
Religion 59–60: History of Religion	
Anthropology 1: Man, Culture, and Society I	
Sociology 2: Man, Culture, and Society II	
Total	42–45

English

English 1 or 1X, 2: English Composition	6
English 52: Introduction to English Literature	3
English 71–72: Introduction to American Literature	6
English 125: Introduction to English Linguistics	3
English 135–36: Shakespeare	6
Speech 11: Voice and Diction	3
*Nine semester hours from the following, as approved by the adviser	9
English 109: Expository Writing	
English 151–52: The Romantic Movement	

* Not required for the minor teaching field.

	Semester Hours
English 161–62: Victorian Literature	
English 165–66: The 20th Century	
English 170: The American Short Story	
English 171–72: Studies in American Literature	
English 173–74: Major American Poets	
English 175–76: American Drama	
English 177–78: American Fiction	
English 182: The English Novel	
English 183–84: The English Drama	
Total	36

French

French 9–10: French Conversation and Composition	6
French 51–52: Survey of French Literature and Civilization	6
French 109–10: Advanced French Conversation and Composition	6
*Additional courses in French, as approved by the adviser	6
Total	24

General Science†

Biology 1–2‡	8
Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Physics 11, 12, 13: Introductory Physics	9
Physics 16: General Physics	3
Nine semester hours from the following	9
Mathematics 3: College Algebra	
Mathematics 6: Plane Trigonometry	
Mathematics 21, 22, 23, 24: Calculus I, II, III, IV	
Total	41

Geography

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103–4: Cartography	6
Geography 145: World Cultural Geography	3
Geography 146: World Political Geography	3
Geology 1–2: Introductory Geology	6
*Six semester hours from the following	6
Geography 153: Western Europe	
Geography 154: The Mediterranean	
Geography 161: Latin America	
Geography 165: Eastern and Southeastern Asia	
Geography 167: The Pacific	
Geography 168: Australia	
*Six semester hours from the following	6
Geography 125: Transportation Complexes	
Geography 126: World Economics	
Geography 133: Regional Industrial Structures	
Geography 134: Location of Industry	
Total	36

* Not required for the minor.
† May not be chosen as a minor field.
‡ An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

German

	Semester Hours
German 1–2: First-year German	6
German 3–4: Second-year German	6
German 9–10: German Conversation and Composition	6
German 51–52: Introduction to German Literature	12
*Additional courses in German, as approved by the adviser	6
Total	36

History

History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6
Six semester hours from three of the following groups, as approved by the adviser	18
Group 1—American History	
History 170: American Colonial History	
History 171–72: Social History of the United States	
History 173: Representative Americans	
History 174: Economic History of the United States	
History 175–76: Political and Constitutional History of the United States	
History 181–82: Diplomatic History of the United States	
History 183: Oversea Expansion of the United States	
Group 2—European History	
History 109–10: Ancient History	
History 111–12: Medieval History	
History 130: Nationalism	
History 131–32: History of Germany	
History 141–42: History of France	
History 145–46: History of Russia	
History 147: Economic History of Europe	
History 149–50: European Diplomatic History	
History 151–52: English History	
Group 3—The Eastern World	
History 145–46: History of Russia	
History 190: History of India	
History 193: History of the Near East	
History 195–96: History of the Far East	
Group 4—Latin American History	
History 163: Colonial Latin America	
History 164: South America since Independence	
History 166: Mexico and the Caribbean since Independence	
Political Science 177: Recent Trends in Latin American Politics and Government	
Political Science 178: International Politics in the Western Hemisphere	
*Additional semester hours from one of the foregoing groups, as approved by the adviser	6
Research Seminar (see adviser—Department of History)	6
Total	42

Mathematics

Mathematics 21, 22, 23, 24: Calculus I, II, III, IV	12
Mathematics 122: Introduction to Abstract Algebra	3
Mathematics 124: Introduction to Matrix Theory	3
*Mathematics 135: Projective Geometry	3
*Statistics 155: Introduction to Mathematical Probability	3

* Not required for the minor teaching field.

	Semester Hours
‖Three additional courses in Mathematics, as approved by the adviser. The additional courses should include one additional course in geometry and one additional course in probability and statistics	9
Total	33

Physical Education*

Biology 1–2†: Introductory Biology	8
Physiology (as approved by the adviser)	3
Physical Education 43–44: Techniques of Physical Education Motor Activities	4
Physical Education 49: Human Anatomy	3
Physical Education 50: Kinesiology	3
Physical Education 51–52‡ (women): Teaching Physical Education Activities or Physical Education 115–16‡ (men): Teaching Team Sports in Secondary Schools	4
Physical Education 107: Teaching Recreational Dance	1
Physical Education 113–14‡: Practice in Teaching Physical Educational Activities	4
Physical Education 117‡ (women): Teaching Modern Dance	1
Physical Education 122: Methods and Materials for Health Education	3
Physical Education 138‡: Organization and Administration of Physical Education	3
Total	36–37

Physics

Physics 11: Introductory Physics	3
Physics 14, 15, and 16: General Physics	9
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 113: Atomic Physics	3
‖Chemistry Elective—Chemistry 11–12: General Chemistry or Chemistry 12 and 21: General Chemistry and Qualitative Inorganic Analysis	8
Mathematics 21, 22, 23, 24: Calculus I, II, III, IV	12
‡Six semester hours from the following	6
Physics 102: Heat and Thermodynamics	
Physics 106: Optics	
Physics 114: Statistical Physics	
Physics 118: Introduction to Solid State Physics	
Physics 123: Nuclear Physics	
Physics 153: Advanced Laboratory in Atomic Physics	
Total	47

Russian

Russian 1–2: First-year Russian	6
Russian 3–4: Second-year Russian	6
Russian 9–10: Russian Conversation	6

* May be chosen as a minor field only, for Bachelor of Arts in Education. See pages 9–12 for requirements for the Bachelor of Science in Physical Education.

† An interdepartmental course offered by the departments of Botany and Zoology. The student may register in either department.

‡ Required only of those preparing to teach on the secondary school level.

‖ Required only of those preparing to teach on the elementary school level.

‡ Not required for the minor teaching field.

	Semester Hours
*Additional courses chosen from the following with permission of the adviser.....	18
Russian 91–92: Introduction to Russian Literature	
Russian 101–2: Readings in Modern Russian	
Russian 141–42: Russian Literature of the 19th Century	
Russian 151–52: Russian Literature of the 20th Century	
Total.....	36

Social Studies

History 39–40: The Development of European Civilization.....	6
History 71–72: The Development of the Civilization of the United States.....	6
Political Science 9–10: Government of the United States.....	6
Twelve semester hours from the following.....	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
Religion 59–60: History of Religion	
Anthropology 1: Man, Culture, and Society I	
Sociology 2: Man, Culture, and Society II	
*Additional second-group courses, as approved by the adviser, from one of the following fields, Anthropology, Economics, Geography, History, Political Science, Religion, and Sociology.....	12
Total.....	42

Spanish

Spanish 9–10: Spanish Conversation and Composition.....	6
Spanish 51–52: Survey of Spanish Literature and Civilization.....	6
Spanish 109–10: Advanced Spanish Conversation and Composition.....	6
*Additional courses, as approved by the adviser.....	6
Total.....	24

Speech

Speech 1: Effective Speaking	3
Speech 2: Persuasive Speaking	3
Speech 11: Voice and Diction.....	3
Speech 32: Oral Reading	3
Speech 101: Voice and Phonetics.....	3
Speech 121: Group Discussion and Conference Leadership.....	3
Speech 154: Play Production	3
Speech 171: Introduction to Speech Correction.....	3
One of the following areas of specialization, as approved by the adviser:	12
*Group 1—Speech Arts	
Twelve semester hours from the following.....	
Speech 102: Oral Interpretation of Literature	
Speech 126: Public Discussion and Debate	
Speech 153: Acting	
Speech 166: History of the Theater	
Speech 169: Creative Dramatics	
Speech 170: Children's Theater	
*Group 2—Speech Correction	12
Twelve semester hours from the following.....	
Speech 174: Speech Therapy	
Speech 176: Speech Correction	
Speech 177–78: Clinical Practice in Speech Therapy	
Speech 182: Hearing Problems and the Testing of Hearing	
Speech 183–84: Clinical Practice in Hearing Therapy	

* Not required for the minor teaching field.

	Semester Hours
Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser	
Total	36

PROFESSIONAL EDUCATION

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses—Secondary

Education 108: Human Development, Learning, and Teaching	3
Education 112: Educational Measurements or Statistics 104: Statistics in Psychology and Education	3
Education 123: Society and the School	3
Education 131: Principles and Methods of Secondary School Teaching	3
Education 134: Student Teaching in Secondary Schools	6–9
Three to six semester hours from the following Special Methods courses	3–6
Education 136: Teaching English	
Education 137: Teaching Speech	
Education 138: Teaching Social Studies	
Education 140: Teaching Mathematics	
Education 144: Teaching Science	
Education 146: Teaching Foreign Languages	
Education 148: Teaching Home Economics	
Education 150: Teaching Business Subjects	
Total	21–27

Professional Courses—Elementary

Education 108: Human Development, Learning, and Teaching	3
Education 111: Methods in Elementary Education	12
Education 112: Educational Measurement or Statistics 104: Statistics in Psychology and Education	3
Education 123: Society and the School	3
Education 135: Student Teaching in Elementary Schools	9
Total	30

Human Development, Learning, and Teaching

Students enrolled in the four-year programs leading to the degree of Bachelor of Arts in Education take this course in the junior year. Those enrolled in five-year programs take it in the fourth year.

This course attempts to promote a functional understanding of the nature of human growth, development, and learning, illustrated by observation of children in learning situations; the nature of teaching based on principles of human growth, development, and learning, illustrated by observation of school situations. At least an equal amount of time is spent in observation and study of the application of these characteristics and principles to classroom situations. Class discussion normally revolves around these field experiences.

The course is also intended to provide the student with exploratory experiences of

assistance to him in deciding whether to choose the profession of teaching. The student's performance in connection with the course is one of the factors considered when the Faculty reviews the list of candidates who have completed the first semester of the junior year (fourth year for those enrolled in five-year programs).

Society and the School

This course is also taken in the junior year by candidates enrolled in four-year programs (fourth year by those in five-year programs).

The course attempts to promote an understanding and appreciation of the role of schools in the sound promotion of the enduring interests of our democratic society. More particularly, it attempts to develop a functional understanding of the contributions of all social agencies in the education of people and of desirable cooperative working relations that help the school to play its part as a member of the institutional "team" of the community.

The course is also concerned with study of the school as a whole—its purposes, program of studies, out-of-class activities, general organization, and major instructional problems. Although schools at all levels are studied, students give particular attention to schools at the level within which they are preparing to teach.

Classes meet for lecture and discussion for one two-hour meeting each week. At least an equal amount of time is spent in field study. During the course each student studies cooperating social institutions. Extended study of schools at the level of the student's special interest is supplemented by briefer studies of schools at other levels. Class discussion is largely determined by field experiences.

This course is also intended to provide the student with exploratory experiences of guidance value. The performance of the student in the first half of the course is also given careful consideration by the Faculty in its review of the list of candidates at the beginning of the second semester of the junior year (fourth year for those enrolled in five-year programs).

Principles and Methods of Secondary School Teaching

Those enrolled in four-year programs take this course in the senior year. Those enrolled in five-year programs take it in the fifth year.

The course is concerned with the skills needed by teachers in connection with classroom management, teaching techniques, homeroom procedures, administrative routines, activity sponsorship, group planning, and public relations.

Classes meet for two one-hour meetings each week for lecture and discussion. At least an equal amount of time is spent in field study.

Special Methods Courses in Secondary Schools

Associated with each teaching field is a course dealing with its special teaching problems. In addition to the study of practices followed by successful teachers, actual teaching content as found in current texts and courses of study is reviewed. Needed content, not included in academic courses available for teaching-field preparation, is taught in these courses.

Student Teaching in Secondary Schools

This course is taken in the senior year by students enrolled in four-year programs (in the fifth year by those in five-year programs).

It begins with the observation of classroom teaching in selected situations. As-

sumption of responsibility for teaching functions is gradual, leading eventually to practice in the complete direction of classroom activities. Those preparing to teach in secondary schools have the opportunity of observing and doing practice teaching in both major and minor teaching fields on the senior high school level. The course is directed by full-time members of the Faculty of the School of Education. The work of each student is under the direct supervision of a critic teacher, selected because of unusual success in teaching, ability to supervise, and broad understanding of educational problems. Critic teachers are part-time members of the instructional staff of the School. Student teaching is done in the public schools of the metropolitan area of Washington, assuring practice in situations comparable to those the student is likely to face on becoming a teacher.

Methods in Elementary Education

Those enrolled in four-year programs take this course in the fall semester of the senior year. Those enrolled in five-year programs take it in the fall semester of the fifth year.

The course offers an integrated approach to general and special methods of instruction in elementary schools. It includes discussion of general skills needed in classroom management, administrative duties, group planning, and public relations. Special techniques of instruction include those needed in teaching arithmetic; science; social studies; and the language arts (reading, literature for children, oral and written expression, spelling, and handwriting). The planning of units of work and the evaluation of pupil progress are also discussed.

Students are required to devote each morning to the prescribed activities of this course. Three mornings a week (9:00–12:00 A.M.) are normally devoted to lectures and discussions by three staff members of the Department of Education. Two mornings a week are spent in observation of and participation in classroom instruction in cooperating public schools of the Metropolitan Area.

Educational Measurement

Those enrolled in four-year programs usually take this course in the senior year. Those enrolled in five-year programs take it in the fifth year.

The course is concerned with ways of discovering and appraising student needs, the selection of pertinent tests, the construction of teacher-made objective and essay-type tests, and the interpretation of test results for guidance purposes.

The course meets for two hours once a week for classroom instruction. Out-of-class assignments include practice in the construction, administration, and scoring of tests.

Student Teaching in Elementary Schools

This course is taken in the senior year by students enrolled in four-year programs and in the fifth year by those enrolled in five-year programs.

Students who have not had previous teaching experience are normally assigned to student teaching for a period of twelve weeks. At the request of the student, this assignment may be divided between two different grade levels. An attempt is made to arrange a student-teaching placement in a school system within the Metropolitan Area of Washington and at the grade levels most appropriate in view of ultimate employment aims. Guidance is provided as the student learns to assume responsibility for the major teaching activities.

Students are not asked to take complete charge of a class at the beginning of the student-teaching period. Assumption of full responsibility for teaching activities is gradual and is preceded by an initial period of guided participation and instruction. Toward the end of his assignment the student teacher takes full charge of the class for a considerable period.

Each student is supervised by a member of the Faculty of the School of Education. A cooperating teacher, chosen for proven teaching ability and the capacity to carry on a satisfactory supervisory relationship, is in direct charge of the student-teaching experience.

SPECIAL CURRICULA IN ELEMENTARY EDUCATION

Students preparing for elementary school teaching may also qualify as teachers of French, Spanish, remedial speech, and physical education. Programs should be planned in conference with an adviser.

ATTITUDES NEEDED FOR SUCCESS IN TEACHING

The development of attitudes that motivate professional behavior consistent with the nature of the learning-teaching process is basic to success in teaching. Among the most important of these attitudes are: appreciation of the role of learning in human improvement, respect for intellectual proficiency and true scholarship, objective thinking, and a sense of mission as a member of an important profession.

The responsibility for developing and strengthening attitudes favorable to success in teaching is shared by all parts of the program of teacher education. General education provides a foundation of information essential to an understanding of the course of human events, skills that promote effective social intercourse, the bases of perspective, and an appreciation of cultural development. Teaching-field preparation stimulates intellectual curiosity and respect for objective scholarship in contrast to rationalization. Professional education is organized in a sequence of learning activities primarily based upon the results of research concerning the ways in which the learner grows and develops.

To help students understand the role of education in society and human development and, thus, strengthen a sense of mission and pride in becoming members of the teaching profession, professional courses are closely related to field experiences, and students are encouraged to discuss freely varying viewpoints concerning goals and the interpretation of research data.

Since individual needs in the development of attitudes vary widely, students are encouraged to confer frequently with staff members. Conference hours are designated for this purpose.

Five-Year Programs Leading to the Degrees of Bachelor of Arts and Master of Arts in Education

Five-year programs are designed: to permit more adequate teaching-field and professional preparation, to prepare for special teaching positions, and to meet teaching-certificate requirements based upon five years of preparation.

Students in these programs usually devote the third year to additional teaching-

field preparation and general education. Ordinarily, teaching-field preparation is continued in the fourth year and the first two professional courses (Education 108 and 123) are taken. The work of the fifth year includes the remaining undergraduate professional courses and the balance of graduate courses needed to meet the requirements of the degree of Master of Arts in Education.

Candidates must have a quality-point index of at least 2.50 before beginning the work of the fourth year. As much as 18 semester hours of the work of the fourth year may be taken for graduate credit. Student Teaching in Secondary Schools, and Student Teaching in Elementary Schools taken in the fifth year, may not be taken for graduate credit.

Candidates enrolled in five-year programs on the secondary school level are able to prepare more adequately in their major or minor teaching fields, or in both. Additional teaching-field courses must be approved by the adviser in the teaching field concerned.

The five-year plan of study also provides an opportunity for candidates to prepare to teach "common learnings" courses in one or more of the various core curriculum plans now found in many secondary schools. Such programs need to be carefully planned to meet the demands of the situation in which the candidate hopes to teach.

A number of cities and some states require five years of satisfactory preparation before issuing certain teaching certificates. Candidates seeking such certificates should familiarize themselves with the requirements of the school system or state concerned and plan their programs accordingly.

Candidates enrolled in five-year programs on the elementary school level are able, in addition to preparation as regular classroom teachers, to prepare for special positions such as: teacher of a foreign language, specialist in remedial speech, specialist in remedial reading, and itinerant teacher of Physical Education.

Five-year programs must meet all the requirements of the degrees of Bachelor of Arts and Master of Arts in Education, and must be approved by the adviser designated for these programs.

The Degree of Master of Arts in Education

Programs of study leading to the degree of Master of Arts in Education are designed to enable prospective teachers and teachers of experience to increase their knowledge of professional and academic information and skills, prepare for special types of educational service, and provide opportunities for graduates of liberal arts or other nonteacher education institutions to acquire needed professional education.

From the various related departments of the University, the student and his adviser select courses to give the student an adequate background in his chosen field of service. The prospective high school or junior high school teacher will ordinarily include study in the subject which he is planning to teach as well as in professional education.

Programs for teachers-in-service and experienced teachers planning to re-enter the profession are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing or telephoning to the Dean.

Graduate programs of study are available in the following fields: (1) adult edu-

cation, (2) classroom teaching—to include strengthening mastery of teaching field. (3) comparative education, (4) curriculum, (5) elementary education, (6) employee training, (7) guidance, (8) history of education, (9) philosophy of education, (10) reading, (11) school administration—secondary or elementary school principalship, and (12) secondary education.

ADMISSION TO CANDIDACY

To be admitted to candidacy for the degree of Master of Arts in Education the applicant must (1) hold a Bachelor's degree from an accredited institution, (2) have an undergraduate quality-point index of 2.50 or above (*C+* average), (3) have demonstrated a genuine interest in teaching, and (4) have personality traits that give promise of better than average success as a teacher. Those wishing to prepare for careers in guidance or administration must have had at least two years of successful teaching experience. Candidates whose undergraduate preparation does not include equivalents of the basic requirements of the Bachelor of Arts in Education must make up deficiencies.

ADVANCED STANDING

For the record, advanced standing is granted for approved courses taken at other accredited institutions, but a minimum of 30 semester hours must be completed at this University as a matriculated candidate for the degree.

Advanced courses completed in this University in excess of the requirements for the Bachelor's degree may be credited toward the Master's degree to the extent of 12 semester hours, if the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

Advanced standing is not granted for work completed five or more years before application for admission or readmission to Master's candidacy.

REQUIREMENTS FOR THE DEGREE

PLAN OF STUDY

The plan of study leading to the degree of Master of Arts in Education requires a minimum of 33 hours of graduate credit. The plan may, at the student's option, include a thesis carrying 6 hours of graduate credit. Whether or not a student selects the thesis option, a minimum of 18 hours, including a course in educational research methods and procedures, must be from courses planned primarily for graduate students (third group courses). A minimum of 12 hours, not including the thesis or the research course must be from courses offered by the Department of Education.

Programs may include additional teaching-field preparation. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education (see pages 13–26.

Programs are planned initially in conference with an admissions adviser in the Office of the School of Education and subsequently with a designated adviser in the candidate's area of specialization. They take into consideration the interest of the candidate, the previous background, certification requirements of the state and locality in which he plans to teach.

All degree requirements must be completed within a period of six years after admission to study.

RESIDENCE

Candidates for the degree of Master of Arts in Education must complete satisfactorily at this University, as matriculated candidates in the School of Education, a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in the Off-Campus Division of the College of General Studies.

THE THESIS

If a candidate selects the thesis option, the thesis must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean. The thesis subject must be approved in writing by the candidate's adviser and filed in the Office of the Dean by the date announced in the Calendar. The thesis in its final form must be presented to the Dean no later than the date announced in the Calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis (see page 45) are available in the Office of the Dean.

Payment of tuition for the thesis will entitle the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period it must be registered for again and tuition paid on the same basis as for a repeated course.

COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a comprehensive examination in two parts: (1) a general three-hour examination concerned with an integrated understanding of the foundations of professional education, and (2) a special three-hour examination concerned with the candidate's area of specialization

The Advanced Professional Certificate

This program is designed to prepare teachers for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale. The program of studies leading to the Certificate is selected by the candidate and his adviser from the various related departments of the University in accordance with the student's needs. In general it includes 30 hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study in his teaching field.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Advanced Professional Certificate are (1) the degree of Bachelor of Arts in Education or Bachelor of Science in Physical Education from this University, or the equivalent from another institution of higher learning; (2) a Master's degree from an accredited institution of

higher learning; (3) at least two years of successful teaching experience; and (4) a permanent teaching license. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education.

ADVANCED STANDING AND TRANSFER OF CREDIT

Advanced standing is granted for appropriate graduate work completed in other accredited higher institutions. However, a minimum of 18 semester hours must be completed at this University as a matriculated candidate in the School of Education. The candidate is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. Advanced standing is not granted for work completed five or more years before application for admission or readmission.

REQUIREMENTS FOR THE CERTIFICATE

PLANS OF STUDY

In planning his program the candidate should give first consideration to his particular needs. If his study for the Master's degree was largely in professional education, he may need courses in his teaching field. If his Master's preparation was in a content field, he may need professional study.

The program must include, in addition to any prerequisites, a minimum of 30 hours of graduate credit, 24 hours of which must be in third-group courses (or the equivalent at other institutions). A maximum of 6 semester hours of graduate credit in second-group courses may be included, a minimum of 12 hours in courses offered by the School of Education must be included.

RESIDENCE

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of 18 semester hours in courses offered on the campus. The balance of the program may include courses in the Off-Campus Division of the College of General Studies or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request, a leave of absence is granted for a period not to exceed three years.

The Degree of Education Specialist

For students who have completed the requirements for a Master's degree in Education and who seek further preparation toward a specific professional objective, the School of Education provides a program of advanced study leading to the degree of Education Specialist. This degree is now available only in the field of administration, but programs in other specialties are projected.

ADMISSION

The requirements for admission to candidacy for the degree of Education Specialist are (1) a Master of Arts in Education degree from The George Washington University or the equivalent from another accredited institution of higher learning, (2) a satisfactory score on the Graduate Record Examination, and (3) at least two years of successful pertinent educational experience. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed and recommended for admission by a staff member of the Department of Education, or by a representative in the candidate's locality appointed by the Dean of the School of Education.

PROGRAMS OF STUDY AND DEGREE REQUIREMENTS

Individual programs are developed, through the faculty-adviser plan, to fit the candidates' abilities, interests, needs, and career goals. Thirty semester hours of work beyond the requirements of the degree of Master of Arts in Education at The George Washington University are specified. At least 21 hours of this work must be taken on campus at this University. A maximum of five calendar years is allowed for completion of the program of study.

At least 12 of the required 30 hours must be in graduate courses in Education selected as appropriate from the following areas of study: (1) foundations and cognate study, (2) background and general principles of the field of study, (3) an area of specialization within the field of study.

THE COMPREHENSIVE EXAMINATION

Successful completion of two three-hour examinations is required.

THE ORAL EXAMINATION

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination is conducted by a committee consisting of members of the staff of the Department of Education and at least one successful practitioner in the appropriate area of specialization, appointed by the Committee on Graduate Studies of the School of Education.

The Degree of Doctor of Education

The School of Education offers programs of advanced study leading to the degree of Doctor of Education. These programs are under the supervision of the Committee on Graduate Studies and provide opportunities for study leading to the following professional objectives: school superintendent, secondary school principal, elementary school principal, supervisor, director of guidance, director of curriculum development, professor of education, and specialist in educational research, employee training, or adult education. All programs require study of interrelated areas of education as well as a doctoral dissertation in the major field of study.

Each program is divided into two parts. The first consists of preparation for and

the passing of comprehensive examinations in each of four supporting fields and a major field of study. The second is composed of research investigation and the writing of a dissertation in the major field of interest and culminates in the final oral examination.

ADMISSION

The applicant must possess adequate preparation for advanced study including graduate work in fields prerequisite to his objective equivalent to that required for the degree of Master of Arts in Education or the degree of Education Specialist at this University, at least three years of successful pertinent educational experience, acceptable personal qualities, and a capacity for creative scholarship and effective leadership.

The applicant first arranges for a preliminary interview with the Assistant Dean for Advanced Graduate Studies to explore his needs in relation to the resources of the School of Education and to provide the guidance needed to proceed with an application for advanced study.

To be admitted to graduate study for the degree, the applicant must be accepted by the Committee on Graduate Studies on the basis of the following factors: (1) his previous scholastic and professional record, (2) the results of prescribed admission tests including the Aptitude Test of the Graduate Record Examination, (3) individual evaluation through personal conferences with at least three faculty members including the major professor under whom the applicant desires to pursue his work, and (4) the outcome of a group interview with the Committee on Graduate Studies.

COMMITTEE ON GRADUATE STUDIES

The responsibility for selection of supporting and major fields rests with the candidate. Each applicant when he appears before the Committee on Graduate Studies should be prepared to present an outline of his plan of study including the selection of major and supporting fields and the tools of investigation needed for the completion of a doctoral dissertation. The tools may include one foreign language or more, statistical methods, or historical criticism. Candidates with less preparation than that normally required for a Bachelor's and Master's degree in Education must make up their deficiencies either prerequisite to or as part of their graduate work.

STUDY FOR THE MAJOR AND SUPPORTING FIELD EXAMINATIONS

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two to three years of full-time work, or the equivalent of part-time work, beyond the degree of Master of Arts in Education. Upon admission to study for the first part of a doctoral program the applicant is assigned to a Committee which prescribes and directs his studies. The Committee is composed of professors who will direct the student's work in the major and four supporting fields. Preparation for and the passing of supporting field examinations, the tool subject examination, precedes preparation for and taking the final examination in the major field.

A student is required to consult individually with supporting and major field professors in order to determine the requirements for each field of study and to receive guidance in preparation for each examination. Supporting field examinations are written and are six hours in length. The major field examination is twelve hours in length, six hours on each of two successive days. Upon satisfactory comple-

tion of all supporting and major field examinations the student, upon recommendation of the Committee on Graduate Studies, is permitted to pursue the second part of his doctoral program.

THE DISSERTATION AND THE FINAL EXAMINATION

The student permitted to continue the second part of a doctoral program is assigned to a Master in Research, generally the major field adviser. Throughout the remainder of the program, the candidate is responsible solely to his Master in Research. Two additional faculty members assist the Master in reading the first draft of the candidate's dissertation. When the dissertation is considered acceptable, the Master recommends the candidate to the Dean for the final oral examination.

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination is conducted by a committee of the Faculty appointed by the Dean, supplemented by at least two leaders in the candidate's field of study from outside the University. The examination is open to the public. Candidates who successfully pass the oral examination are recommended for the degree by the Faculty of the School of Education.

No later than the date specified in the University calendar the candidate must submit to the Dean three complete copies of the dissertation (including a summary which is to be inserted as an appendix) together with a fourth copy of the summary and a copy of the abstract for inclusion in the announcement of the examination. The summaries of accepted dissertations will be printed in a numbered issue of the University BULLETIN.

RESIDENCE AND CONTINUOUS STUDY

All the preparation for the degree must be done in residence. The student must maintain continuous registration in the School of Education, except when the Committee on Graduate Studies has granted a leave of absence. Failure to maintain registration in each semester of the academic year may result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the Committee on Graduate Studies.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the minor and supporting field examinations or as a candidate engaged in doctoral research. The supporting and major field examinations, however, must be completed within five years of the date of admission and the entire program must be completed within eight years, regardless of full-time or part-time study. Each candidate is required to complete one semester or more of his program in full-time study. Full-time study in two nine-week Summer Sessions is equivalent to full-time study for one semester.

Special Program in Elementary Teacher Education

For six years, beginning with 1963–64, the School of Education will offer an intensive fifth-year program designed to prepare outstanding graduates of accredited liberal arts colleges for teaching in elementary schools. This program is supported by a grant from The Ford Foundation. Successful fulfillment of its requirements leads to certification as an elementary teacher and fifteen hours of graduate credit toward the degree of Master of Arts in Education.

Grants-in-aid, in amounts justified by need, may be secured to cover the tuition expenses of the program. Brochures of information may be secured by writing to: Program Director, Special Program in Elementary Teacher Education, School of Education, The George Washington University, Washington 6, D. C.

ADMISSION TO THE PROGRAM

To be admitted as a student-intern, an applicant must (1) have a Bachelor's degree from an accredited liberal arts institution, including courses which will meet the general education requirements for teacher certification, (2) show evidence of interest in children and a sincere desire to teach, (3) submit three written references attesting to quality of academic record and personality, (4) submit a score on the Aptitude Test of the Graduate Record Examination, and (5) be interviewed by the University Selection Committee, or under arrangements specified by the Committee and approved by the Dean of the School of Education.

PLAN OF STUDY

The program of study begins with a six-week summer session and continues through the first twelve weeks of the fall semester. Course work during this time is planned to help each student gain understanding of (1) the characteristics of elementary school children, (2) the subject-matter areas of the elementary school curriculum, (3) basic dimensions of teaching methodology, (4) the relationship between educational theory and methods, (5) educational tests and measurements, and (6) the role of the school in American society.

During the last six weeks of the fall semester, students will be given full-time student teaching assignment in a near-by public school. This part of the program will permit the student to use, in an actual teaching situation, the educational theories and methods which he has been studying. It is accompanied by a weekly on-campus seminar.

A salaried internship during the spring semester in one of the cooperating school systems in the area gives the student an opportunity to assume the responsibilities of a beginning teacher, with the help and guidance of university and public school staff members. Seminar meetings will be scheduled weekly for discussion of common problems and for cooperatively planned work on individual and group needs of interns.

Special Curricula

The School of Education provides special curricula for liberal arts graduates, housewives, and retired military personnel who wish to prepare for teaching. Those seeking certification through completion of a program of teacher preparation approved by the National Council for Accreditation of Teacher Education but who do not wish to work for a degree, may enroll in a certification program if they meet the admission, scholarship, and personality requirements of degree candidates. The School also provides a wide range of courses of interest to teachers who wish to renew licenses. See "Application for Admission".

Reading Clinic

To help children and adults with reading difficulties the University operates a diagnostic and corrective reading clinic. Children may be referred by principals, teachers, or parents. Adults may apply by telephone.

To arrange for a clinical examination of reading status, address The George Washington University Reading Clinic, 2018 I Street NW., or telephone FEderal 8-0250, Extension 491, for an appointment. The Clinic is open for appointments Monday through Friday, from 9:00 A.M. to 5:00 P.M.

Fees.—The fee for individual diagnosis is $45; for individual instruction, $6 a lesson; for semi-individual instruction, $5 a lesson; for instruction in small groups with common reading difficulties, $3.75 a lesson ($3.25 for students currently enrolled in the University). All fees are payable in advance at the Office of the Cashier.

ADMISSION

APPLICATION FOR ADMISSION OR READMISSION

Forms for application for admission or readmission are available at the Office of the Director of Admissions, 2029 G Street NW., Washington 6, D. C.; telephone: FE 8-0250, extension 344. The application for admission, with a $15 application fee and a recent, signed photograph, should be returned to the Office of the Director of Admissions.

Application for admission or readmission for degree candidacy, together with all required credentials, should be received by July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions to insure consideration.

No application will be considered after September 1 for the fall semester, January 10 for the spring semester, and June 1 for the Summer Sessions (or two weeks prior to the first day of registration for the summer session for which admission is sought). Exceptions may be made under extraordinary circumstances, at the discretion of the Director of Admissions.

An applicant who has attended one or more institutions of higher learning must request each registrar to mail directly *to the Office of the Director of Admissions* a transcript of his record, *even though credits were not earned.* If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Office of the Director of Admissions.

Admission to graduate study.—A student with a Bachelor's degree from this University who wishes to work toward a Master's degree *must* apply, at the Office of the Director of Admissions, for admission to graduate study.

READMISSION

A student previously registered in the University who was not registered on-campus during the immediately preceding semester (summer session excluded), must apply for readmission in the Office of the Director of Admissions. If he applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of the Director of Admissions from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

ENTRANCE REQUIREMENTS

FOR THE BACHELOR'S DEGREES

Bachelor of Arts in Education *or* Bachelor of Science in Physical Education

The satisfactory completion of the two-year curriculum in Education or Physical Education offered in the lower-division of Columbian College of Arts and Sciences (see pages 10, 12, 13–14), or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent is required. The applicant must have a quality-point index of 2.00 (average grade of *C*) counting *Incomplete* grades as *F*. He must have demonstrated a genuine interest in teaching, possess personality traits that give promise of success as a teacher.

Applicants in the Metropolitan Washington Area must have a personal conference with the Assistant Dean of the School of Education in charge of admission or with one of his assistants. Applicants from a distance who are strongly recommended as good teacher prospects by a member of the Faculty of another institution may be admitted without a personal conference.

Applicants who have not completed requirements in the appropriate pre-Education curriculum in Columbian College of Arts and Sciences, or the equivalent at other accredited institutions, may be admitted to the School of Education with deficiencies. Such deficiencies must be removed before graduation and in the sequence prescribed by the student's adviser.

Advanced Standing

An applicant for advanced standing may be considered for admission upon presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University. Credit for transferred work will be assigned by the School of Education to the extent that it meets the requirements for the degree sought at this University and subject to the University regulations concerning satisfactory subsequent work.

The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education. The applicant seeking to qualify for a higher level in the local salary scale must have his program approved by the appropriate representative of the school system employing him.

REGISTRATION

A student cannot register for classes until he has received a letter of admission to the University, issued by the Office of the Director of Admissions.

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration (summer session excluded) should file an application for readmission in the Office of the Director of Admissions two weeks in advance of registration.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration.* Allowance for credit for work done concurrently at another institution will be at the discretion of the appropriate committee.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted, effective September 1963:

Tuition Fees

For undergraduate, Master's, Advanced Professional Certificate, and Education Specialist study:	
Full-time program (12 to 18 hours), a semester	$550.00
Part-time program *and* hours in excess of 18, for each semester hour	36.00
For the degree of Doctor of Education:	
For work* leading to and including the general examination	1,200.00
For work leading to and including the final examination	1,200.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

Bachelor's, Master's, Education Specialist, Doctor's degrees	25.00
Advanced Professional Certificate	25.00

Fee for Binding Master's Thesis 6.00

* This fee does not cover the cost of tuition for elementary courses (numbered 1-100).

Fee for Printing Summary of Doctoral Dissertation	85.00

Special Fees

Application fee, nonrefundable	15.00
Application for room reservation fee	100.00
Admission tests (when required)	6.00–12.00
Late-registration fee for failure to register within the designated period	5.00
Change fee, for each change in program: dropping or adding a course, changing from one section to another within a course, change of status (from auditor to credit status or vice versa), and change in credit hours for a course	2.00
National Teacher Examinations fee, for Bachelor of Arts in Education degree candidates	9.00–13.00
Withdrawal fee, charged in special cases	5.00
Service fee, for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements.* Due and payable on the official days of registration	36.00
For each examination to qualify for advanced standing and for each special examination	5.00 5.00
English test for foreign students (when required)	3.00
Laboratory checkout fee, for failure to check out of chemistry laboratory by the date deadline set by the instructor	1.00
Transcript fee, for each transcript of record	

Registration in the University entitles each student to the following University privileges: (1) the services of the Placement Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate and a student is no longer in residence when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees are due and payable in advance at the time of each registration.

The student may sign a contract at the time of each registration for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester

One-third at the time of registration; one-third on the first working day† in November; one-third on the first working day† in December.

Spring Semester

One-third at the time of registration; one-third on the first working day† in March; one-third on the first working day† in April.

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* Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

† The University work week is Monday through Friday, inclusive.

Arrangements for the above may be made with the Office of the Cashier at the time of registration. Installment-due notices are mailed. However, nonreceipt of notice is no excuse for failure to meet obligations when due.

A student who fails to meet payments when due, but who pays his fees within the following two weeks of the date on which payment is due, is charged a service fee of $2. A student who fails to meet payments within these two weeks after payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Fall Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in October or November, cancellation of two-thirds or one-third, respectively, of tuition charges.

Spring Semester

Full-time program.—Complete withdrawal from the University dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the full-time program charges.

Partial withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of the difference between the charges for the full-time program and the hourly charges of the part-time program continuing in effect.

Part-time program.—Withdrawal dated on or before the last working day* in February or March, cancellation of two-thirds or one-third, respectively, of tuition charges.

No refund or reduction will be allowed on any withdrawal dated after the last working day* in November (fall semester) or March (spring semester).

A student enrolled in a full-time program, who drops or adds a course and continues to be in a full-time program, will have no financial adjustments of tuition made other than those involving course fees.

* The University work week is Monday through Friday, inclusive.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry or pharmacy who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $3. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

REGULATIONS

AMOUNT OF WORK

Fifteen to 17 semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher, may, with the permission of the Dean, enroll for 18 or 19 hours. No student may enroll for more than 19, except by permission of the Committee on Scholarship.

A student employed 15 hours or less a week may carry a normal program of college work.

A student employed from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student employed from 26 to 34 hours a week may enroll for 9 or 10 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student employed 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment after registration or at any time during a semester must report immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

SCHOLARSHIP

A student who fails to maintain the scholarship requirements of the School of Education may be dismissed from the University.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate

The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

Graduate

For graduate work, grades are indicated as *E* (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete).

THE QUALITY-POINT INDEX

Undergraduate scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure—Academic Dishonesty" grade will be employed in computation of the quality-point index.

PROBATION

A student who fails to maintain a quality-point index of at least 2.00 is placed on probation. He remains on probation as long as his index is below 2.00, or until his probation is removed by the Committee on Scholarship.

SUSPENSION

A student on probation who fails to raise his index to 2.00 within the time specified may be suspended. A student who fails one-half or more of the minimum of 16 semester hours may be suspended.

A student suspended for poor scholarship may, within ten days, appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student seems likely to improve in his scholarship, the Committee may readmit him on probation. A student denied readmission may again, after the lapse of a calendar year, petition the Committee through the Dean for readmission. A student suspended twice will not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who does not have a clear financial record.

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within the School

A student may not change or drop courses (see "withdrawal", above) or change his status to that of auditor except with the approval of the Dean, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements of the course of study to which the change is made must be met.

* The University work week is Monday through Friday, inclusive.

Transfer within the University

Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Application for transfer must be made to the Director of Admissions on the form provided by his office.

Students wishing to transfer from the Division of University Students to the School of Education should note that a maximum of 45 semester hours will be accepted in transfer.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various colleges and schools have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements and to note that in all undergraduate divisions 30 semester hours including *at least 12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

CREDIT

Credit is given only after registration for a course and satisfactory completion of the required work.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation

It is the student's responsibility to file an application for graduation in the Office of the Registrar at the time of registration for the last semester of the senior or final year. Students expecting to complete, during the Summer Sessions, requirements for degrees to be awarded at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Scholarship

The undergraduate student must maintain a quality-point index of at least 2.00.

Candidates for the Master's degree, the Advanced Professional Certificate, and the degree of Education Specialist, must obtain at least a grade of *Satisfactory* (*B* level) on each course of the required minimum graduate program and must maintain a quality-point index of at least 2.50 on all prerequisite courses.

Curriculum

Curriculum requirements for the Bachelor's degrees are stated on pages 9–26; for the Master's degree, on pages 26–30.

Residence

Bachelor's and Master's candidates must complete a minimum of one year or 30 semester hours in residence. Not more than 9 hours of this requirement may be satisfied by off-campus courses. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Advanced Professional Certificate candidates must take a minimum of 18 hours on campus at this University.

Education Specialist candidates must take a minimum of 21 hours on campus at this University.

Degree candidates are expected to maintain continuous residence by registering for at least one course in each of two of the three terms (fall, spring, summer). Candidates who are unable to enroll for a course but wish to use the library facilities and consult staff members may, with the permission of the Dean, register "in residence" by paying the residence fee. Candidates, who for reasons beyond their control, must temporarily discontinue their studies may be granted leave of absence for one or two terms, on petition to the Dean's Council.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

National Teacher Examinations

All candidates for the Bachelor of Arts degree in the School of Education are required to take the National Teacher Examinations at one of the regularly scheduled administrations conducted in February, July, and October. Candidates expecting to graduate in June should take the examinations the previous February. Those expecting to graduate in February should take the examinations the previous July or October.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. A copy of test scores must be forwarded to the School of Education.

Each senior required to take the National Teacher Examinations must register for them in the Office of the Dean at least thirty days prior to the date of the administration of the examinations. Details concerning time, place, registration, and fees may be obtained in the Office of the School of Education.

Thesis or Dissertation

A thesis or dissertation submitted in partial satisfaction of requirements for the Master's or Doctor of Education degrees must be presented in its final form to the Dean no later than the date specified in the Calendar. Three complete copies of each are required. It is the responsibility of the candidate for a graduate degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the thesis or dissertation, which are rigidly enforced.

Accepted theses and dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate Dean.

Attendance and Conduct

The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Graduation in Absentia

Application for graduation *in absentia* must be submitted to the Dean.

HONORS

With Distinction

In all undergraduate divisions of the University the degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special Honors

Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

HOURS

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS, GRADUATE SCHOLARSHIPS, AND ASSISTANTSHIPS

Unless otherwise specified, applications should be submitted not later than March 1 preceding the period for which the award is to be made. They should be directed to the chairman of the department or the dean of the school concerned and addressed to The George Washington University, Washington 6, D. C.

University Teaching Fellowships.—Assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree in the general field of his future doctoral study. Each teaching fellow receives an annual stipend (on a nine-month basis) of up to $2,000 plus tuition and laboratory fees for whatever schedule of study or research his fellowship duties permit him to carry. Tuition and laboratory fees may not exceed $600. Stipends vary with the work load of the individual teaching fellow. Normally a University teaching fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the chairman of the department of instruction concerned.

Graduate Teaching Assistantships.—Open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $2,000 on a nine-month basis plus tuition and laboratory fees for the program of studies which the duties of his assistantship permit him to carry. Tuition and laboratory fees may not exceed $730. Application should be made to the chairman of the department of instruction concerned.

Special Program in Elementary Teacher Education.—A program supported by the Ford Foundation. For details, see pages 33–34.

SCHOLARSHIPS AND PRIZES

The following scholarships and prizes are limited to students in the School of Education. The University offers many others which are open to School of Education students. A special bulletin containing a complete list and full information may be obtained from the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded.

Scholarship application should be made in writing on or before April first for the following academic year and, unless otherwise specified, should be addressed to the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C. Awards are made during the month of April. All scholarships begin with the fall semester.

Mildred Green Memorial Scholarship Fund (1959).—Established by Alpha Theta Chapter of Pi Lambda Theta, provides annual tuition aid for a student in the School of Education, upon the recommendation of the donor.

Anna Spicker Hampel Scholarship (1949).—Established by Evelyn Hampel Young in memory of her mother, provides tuition aid for a young married woman in the School of Education or Columbian College of Arts and Sciences.

Elizabeth V. Brown Scholarship Fund (1925).—A Columbian Women Scholarship memorial fund of $1,200 for tuition aid, established by the College Women's Club of Washington, D. C., and restricted to the School of Education.

Phi Delta Kappa Prize.—Awarded annually by Beta Gamma Chapter to the outstanding senior man in the teacher education program in the School of Education.

Pi Lambda Theta Prize.—Awarded annually by Alpha Theta Chapter to the outstanding senior woman in the teacher education program in the School of Education.

FINANCIAL AID

University Loan Fund.—The Trustees of the University have made available a fund for short-term loans to students to provide for partial payment of tuition. Application should be made three days prior to the dates on which tuition installments are due.

Home Economics Loan Fund.—A fund of $382, given by the D. C. Home Economics Association, is available for loans to senior girls majoring in Home Economics.

National Defense Student Loan Fund.—This fund is available to full-time undergraduate and graduate students who are in need of financial assistance. Priority is given those applicants who express a wish to teach in elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. After application for admission to the University has been completed, application on forms prescribed for this loan fund must be filed in the Office of the Treasurer no later than (1) for the *fall semester*—June first for students currently registered in the University and July first for entering students; (2) for the *spring semester*—December first; (3) for the *Summer Sessions*—May first.

For complete information on other Fellowships, Scholarships, Prizes, Financial Aid, request the Special Bulletin on the subject, which is available in the Office of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

A list of banks and commercial finance firms offering various types of tuition payment plans is available through the Office of the Treasurer.

RESIDENCE HALLS

The University maintains eight attractively furnished residence halls for full-time students. Meals are served at the Student Union.

All women students under twenty-one years of age and enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during the summer sessions are required to live in the University residence halls or at home with their parents. Upon written approval of their parents and the permission of the Dean of Women, freshman women may live with immediate relatives and upperclass women may live with contemporaries of their parents. Under *no* circumstances may a woman student under twenty-one years of age taking a full academic program live in an apartment with her contemporaries.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Rooms are leased for the academic year, and a deposit of $100, which is credited toward the fall semester room charge, is required. If notice of withdrawal or cancellation of room reservation is received prior to June 1, $50 of the deposit will be refunded. Room rentals are payable in advance by the semester. Room charges for the academic year 1963–64 are as follows:

	Academic Year	
Residence Halls for Men:	*Double*	*Triple*
John Quincy Adams Hall	.....	$350
John C. Calhoun Hall	$400	350
James C. Welling Hall (limited space available)	320	.....

Residence Halls for Women:	*Single*	*Double*
William H. Crawford Hall	.....	$450
Devens Hall	$535	405
Hancock Hall	535	405
Dolley Madison Hall	.....	450
Hattie M. Strong Hall	535	450

Forms for applications, together with detailed information, may be obtained from the Dean of Women, Woodhull House, 2033 G Street NW., or the Dean of Men, Building Q, 2029 H Street NW.

Information concerning all off-campus housing near the University may be obtained at the Office of the Dean of Men. The reservation of rooms in private houses must be made by students.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 A.M. to 5 P.M., Monday through Friday, during the academic year and Summer Sessions, with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination of all students who are applicants for courses in Physical Education;* (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.† All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

This medical benefit applies only to illness or disability incurred while currently enrolled in the University. It does not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

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* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.
† See Rule (5) for exception.

HONOR SOCIETIES AND PROFESSIONAL ORGANIZATIONS

Alpha Pi Epsilon.—An honorary Home Economics Sorority whose purposes include the improvement of scholarship and leadership standards among Home Economics students.

Phi Delta Kappa.—An international professional fraternity for men in Education, to promote fellowship based on common interests and ideals which make possible group action for the development of free public education through research, service, and leadership.

Pi Lambda Theta.—A national honorary association for women in Education, dedicated to the conception of education as a profession.

Student National Education Association.—Provides members with opportunities for developing personal and professional competency through an understanding of the history, ethics, and programs of the organized teaching profession.

COURSES OF INSTRUCTION

The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved before the mid-point of the course by the Dean of the School of Education and by the officer of instruction concerned, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours of credit is marked (3).

DEPARTMENT OF EDUCATION

Courses offered by the Department of Education are of two types: those designed for the preservice education of candidates and those planned for the inservice education of teachers, counselors, and administrators.

Preservice courses devote two or three hours a week to lecture and discussion supplemented by a minimum of two hours a week of related field work. A clinical approach to the study of educational problems is used—lectures and discussions revolving around observed practices.

Inservice courses meet once a week for a two-hour period. Class work is supplemented by extensive reading assignments, the preparation of reports, and field work. A student enrolled in one of these courses should plan to devote not less than seven hours a week, exclusive of class time, to the work of the course.

Ample opportunity is provided to study teaching or administrative problems of special interest. To enable students to consult with instructors regarding individual problems, a conference hour is scheduled immediately before or after the class period.

Only the courses designed to provide professional information and skills are listed

below. For courses needed for general education or teaching-field preparation, see the catalogue for the Division of University Students. In addition to courses offered in the Department of Education a number of professional courses for teachers are offered in the departments of Psychology, Speech, and Statistics. These are listed below together with courses offered by the Department of Education.

Whenever possible, the exact hour of class meeting is stated. Hours for classes not yet scheduled may be found in the Schedule of Classes for the semester concerned.

A *Reading Clinic* — Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for individual diagnosis, $45; for individual instruction, $6 a lesson; for semi-individual instruction, $5 a lesson; for instruction in small groups with common reading difficulties, $3.75 ($3.25 for students currently enrolled in the University).

SECOND GROUP

108 *Human Development, Learning, and Teaching* (3) — McIntyre
(Formerly Education 109–10)

Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121. (Fall and spring: lecture section A—M 1:10–3 P.M., section B—Th 6:10–8 P.M., conference and field work—as arranged; summer 1963 (McIntyre, Lang).)

111 *Methods in Elementary Education* (12) — McIntyre and Staff

For seniors in the elementary school curriculum. Methods, materials, appraisal, and field experiences in elementary schools. Problems and procedures in teaching the language arts (including reading, literature for children, oral and written expression, spelling, and handwriting), arithmetic and science, social studies. Planning units of work, general classroom procedures, and evaluation of pupil progress. Observation and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—MTWThF 9:10–12 A.M.)

112 *Educational Measurement* (3) — McCauley

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall—T 3:10–5 P.M.; spring—T 6:10–8 P.M.; summer 1963.)

113 *Elementary School Art* (3) — Nowlin

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. Material fee, $4.50. (Fall and spring: lecture and laboratory—M 6:10–9 P.M., field work—as arranged; summer 1963 (Crump).)

114 *Elementary School Music* (3) — Mitchell

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22, or 121. (Fall and spring—Th 6:10–8 P.M., field work (2 hours)—as arranged; summer 1963.)

115 *Teaching of Reading in the Elementary School** (3) — Parker

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123 or teaching experience. (Spring—W 6:10–8 P.M., field work (2 hours)—as arranged; summer 1963.)

116 *Elementary School Social Studies** (3)

For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Summer 1963.)

* This course may not be taken by students who have completed or plan to enroll in Education 111.

117 *Elementary School Science** (3) St. Cyr
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Spring—Th 6:10–9 P.M., field work (2 hours)—as arranged; summer 1963.)

120 *Elementary School Arithmetic** (3)
For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience. (Fall—T 6:10–8 P.M., field work (2 hours)—as arranged; summer 1963 (Baker).)

123 *Society and the School* (3) St. Cyr and Staff
Lecture (2 hours), conference (1 hour), field work (2 hours). For the general student as well as the prospective teacher. Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel. (Fall and spring: lecture section A—W 1:10–3 P.M., section B—T 6:10–8 P.M., conference and field work—as arranged; summer 1963 (Boswell).)

128 *Children's Literature** (3) Walker
For teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22. (Spring—M 6:10–8 P.M., field work (2 hours)—as arranged; summer 1963 (McIntyre).)

131 *Principles and Methods of Secondary School Teaching* (3) Boswell, Myers
For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 108 and 123. (Fall: section A—TTh 12:30–1:45 P.M., section B—MW 4:30–5:45 P.M.; spring—MW 4:30–5:45 P.M. Field work—as arranged.)

134 *Student Teaching in Secondary Schools* (6 to 9) Boswell and Staff
For seniors in the secondary school curriculum. Sections A, B, and C are for full-time academic majors. Section D is for physical education majors (Myers, Stallings). Student teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (134A: fall—as arranged; 134A, 134B, 134C, and 134D: spring—as arranged.)

135 *Student Teaching in Elementary Schools* (9) McIntyre
For seniors in the elementary school curriculum. Student teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 108 and 123. (135A and 135B: spring—as arranged.)

SPECIAL METHODS COURSES†

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied, and actual teaching content as found in current texts and courses of study is reviewed.

136 *Teaching English* (2 to 4) Lumsden
Prerequisite†: 18 semester hours in English. (Spring: lecture—M 6:10–8 P.M., field work (2 hours)—as arranged.)

137 *Teaching Speech* (2 to 4) Kosh
Prerequisite†: 18 semester hours in speech or the permission of the instructor. (Spring: lecture—T 8:10–10 P.M., field work (2 hours)—as arranged.)

* This course may not be taken by students who have completed or plan to enroll in Education 111.
† Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

138 *Teaching Social Studies* (2 to 4) Boswell
Prerequisite*: 24 semester hours of social studies. (Spring: lecture—Th 8:10–10 P.M., field work (2 hours)—as arranged.)

140 *Teaching Mathematics* (2 to 4) Brown
Prerequisite*: Mathematics through calculus. (Spring: lecture—Th 6:10–8 P.M., field work (2 hours)—as arranged.)

144 *Teaching Science* (2 to 4) Eller
Prerequisite*: 24 to 40 semester hours of science. (Spring: lecture—T 6:10–8 P.M., field work (2 hours)—as arranged.)

146 *Teaching Foreign Languages* (2 to 4) McSpadden
Prerequisite*: 18 semester hours of one foreign language. (Spring: lecture—T 5:10–7 P.M., field work (2 hours)—as arranged.)

148 *Teaching Home Economics* (2 to 4) Towne
Prerequisite*: 30 semester hours of Home Economics. (Spring—as arranged.)

150 *Teaching Business Subjects* (2 to 4) Shott
Prerequisite*: 30 semester hours of business education. (Spring—S 9:10–11 A.M.)

THIRD GROUP†

203–4 *Comparative Education* (3–3)
Comparison of foreign educational systems with those of the United States, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—Th 8:10–10 P.M.)

205–6 *The Curriculum*‡ (3–3) St. Cyr
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. (Academic year—S 11:10 A.M.–1 P.M.; summer 1963—Education 205 (3).)

207 *Curriculum Materials** (3) St. Cyr
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. (Fall—Th 6:10–8 P.M.)

208 *Human Development, Learning, and Teaching* (3) Lang
(Formerly Education 201–2)
Lecture (2 hours), conference (1 hour), field work (2 hours). For graduate students. Principles of effective teaching based on an understanding of human growth and development and the nature of learning. Prerequisite: Psychology 1 and 22, or 121. (Lecture: fall—M 6:10–8 P.M.; spring—W 8:10:10 P.M. Conference and field work—as arranged.)

209 *Child Growth and Development* (3) Rashid
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school. (Fall—W 8:10–10 P.M.)

210 *Adolescent Growth and Development* (3) Rashid
A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships. (Spring—W 8:10–10 P.M.)

* Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.
† A degree from an accredited institution is prerequisite to all third-group courses.
‡ Prerequisite: adequate professional preparation.

212 *Educational Measurement* (3) McCauley
Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments. (Fall—Th 8:10–10 P.M.)

213–14 *History of Education* (3–3) Wilson
First half: the European backgrounds of American education. *Second half:* the evolution of the American school system. (Academic year—T 6:10–8 P.M.)

215 *Education of Exceptional Children** (3)
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance. (Not offered 1963–64.)

216 *Education of Slow-learning Children** (3) Amos
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. (Summer 1963.)

217–18 *Philosophy of Education** (3–3) Rogers
First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school. (Academic year—M 8:10–10 P.M.; summer 1963—Education 217 (3) (Darland).)

219 *Elementary School Classroom Procedures** (3) Baker
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. (Summer 1963.)

221 *Early Childhood Education** (3) McIntyre
The philosophy and principles underlying the teaching of four- to seven-year olds. Emphasis is on organization, equipment, methods, and materials for promoting the growth needs of young children. (Summer 1963.)

223–24 *Reading Problems** (3–3) Coleman
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems. (Academic year—W 6:10–8 P.M.)

226 *Reading in Secondary Schools* (3) Coleman
For experienced teachers. Consideration of special problems in the content areas, diagnostic and corrective techniques and materials for the classroom teacher, reading improvement programs. (Spring—T 6:10–8 P.M.)

227 *Basic Issues in Elementary Education* (3) Baker
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices. (Fall—F 5:10–7 P.M.)

228 *Instructional Areas in Elementary Education* (3) Baker
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education. (Spring—5:10–7 P.M.)

229 *Administration of Elementary Education* (3) Carroll
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. (Fall—Th 6:10–8 P.M.; summer 1963.)

* Prerequisite: adequate professional preparation.

231 *Secondary School Classroom Procedures** (3) Giancaspro
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activites, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. (Fall—Th 8:10–10 P.M.; summer 1963 (Boswell).)

233 *Audio-visual Education** (3) Kubalak
Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and epuipment.. Material fee, $7. (Spring—S 9:10–12 A.M.; summer 1963.)

241 *Education of the Gifted** (3) Amos
For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. (Fall—W 8:10–10 P.M.; summer 1963.)

243 *Human Relations in the Classroom** (3) Marinaccio
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Summer 1963)

245 *School and Community** (3) Angel
The school as an important member of a team of social agencies that builds the community. (Fall—Th 6:10–8 P.M.; spring—Th 8:10–10 P.M.; summer 1963.)

247 *Vocational Education** (3) Walsh
Development in the United States; current conceptions, agencies involved, problems, and trends. (Not offered 1963–64.)

251 *Guidance in Elementary and Secondary Schools** (3) Detwiler
A survey course: scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. (Fall and spring—W 8:10–10 P.M.; summer 1963 (McDaniels).)

252 *Organization and Administration of Guidance Services* (3)
Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance. (Not offered 1963–64.)

253 *Analysis of the Individual for Purposes of Counseling* (3) Detwiler
(Formerly Psychology 236)
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent. (Fall—M 6:10–8 P.M.)

254 *The Junior High School** (3) Root
Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Not offered 1963–64.)

255–56 *Secondary Education** (3–3) Root
First half: current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields. (Academic year—T 8:10–10 P.M.; summer 1963 (Root, Giancaspro).)

257 *Occupational and Educational Information* (3) Detwiler
(Formerly Psychology 229)
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance. (Spring—M 6:10–8 P.M.; summer 1963.)

* Prerequisite: adequate professional preparation.

258 *Techniques of Counseling* (3) McCauley
(Formerly Psychology 228)
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems are discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258. (Fall—T 6:10–8 P.M.; spring—W 8:10–10 P.M.; summer 1963 (Detwiler).)

259–60 *Secondary School Management** (3–3) Johnson
For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs. (Academic year—W 5:10–10 P.M.)

261–62 *Practicum in Guidance* (3–3) Detwiler
Supervised practical instruction in school guidance. Prerequisite: graduate work in counseling. Admission by permission of the Chairman of the Department. (Academic year—as arranged.)

263–64 *Employee Training* (3–3) Walsh, Root
First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training. (Academic year—M 8:10–10 P.M.)

265–66 *Teaching Secondary School English—Materials, Resources, Content* (3–3) Lumsden
A refresher course for teachers of English. Discussion of new approaches to course content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills structural linguistics, composition, and speech. *Second half:* American and English literature. (Academic year—W 6:10–8 P.M.)

267 68 *Teaching Secondary School Social Studies—Materials, Resources, Content* (3–3) Whipple
A refresher course for teachers of the social studies. Discussion of new approaches to course content. Offered in cooperation with the departments of History, Political Science, Geography and Regional Science, Economics, and Sociology and Anthropology. (Not offered 1963–64.)

269–70 *Business Management of Schools I–II** (3–3) Carroll
First half: Philosophy, responsibilities, and functions of the business management office in public education institutions; responsibilities of boards of education, superintendents, and central office staffs. *Second half:* planning and financing; building utilization, operation, and maintenance; transportation; lunchrooms; purchasing, storing, distribution; accounting and budgetary procedures; depreciation, insurance, and bond issues. (Not offered 1963–64.)

271 *The Teacher and School Administration** (3) Suber, Carroll, Fox
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. (Fall—S 9:10–11 A.M.; spring—W 6:10–8 P.M.; summer 1963.)

272 *The Teacher and School Supervision** (3) Carroll, Fox
Nature, organization, human relationships, and techniques. (Fall—W 6:10–8 P.M.; spring—S 9:10–11 A.M.; summer 1963.)

* Prerequisite: adequate professional preparation.

273–74 *Teacher Education** (3–3) Darland

First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences. (Academic year—M 8:10–10 P.M.)

275 *School Finance** (3) Carroll

Educational financial theory, practice, and control, including methods of financing. (Spring—T 8:10–10 P.M.)

276 *Seminar: Public Relations in School Administration** (3) Carroll

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Fall—T 8:10–10 P.M.)

277 *Administration of School Personnel** (3) Carroll

Techniques and problems of administration related to more effective service of staff personnel. (Spring—Th 6:10–8 P.M.; summer 1963.)

278 *School Law** (3) Remmlein

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Not offered 1963–64.)

279–80 *Adult Education** (3–3) Detwiler, Holden

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—T 8:10–10 P.M.; summer 1963—Education 279 (3) (Detwiler).)

283–84 *Higher Education** (3–3) Rogers

First half: development, present status, and outlook for American colleges; purposes of higher education, current and projected programs; trends in curriculum, instruction, administration, and evaluation of outcomes. *Second half:* principles in development of college programs; study of curricula in liberal arts and professional fields; relationship of institutional services and facilities to the instructional program. (Not offered 1963–64.)

285 *Extra-classroom Activities** (3)

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. (Not offered 1963–64.)

287–88 *Clinical Study of Reading Problems** (3–3) Coleman

For advanced students. Diagnostic and corrective work under supervision of the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223–24 or the equivalent. Material fee, $5 a semester. (Academic year—F 5:10–7 P.M.)

289 *Supervisory Problems in Reading** (3) Coleman

For experienced teachers, principals, supervisors, and superintendents. Problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency. (Not offered 1963–64.)

291 *Planning the School Plant* (3) Cameron

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Not offered 1963–64.)

293–94 *Research* (3–3) The Staff

Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor. (Academic year—as arranged.)

* Prerequisite: adequate professional preparation.

295 *Educational Research Methods and Procedures* (3) McCauley
Required of all candidates for graduate degrees in Education. To be taken early in the student's graduate program. Prerequisite: an elementary course in statistics. (Fall—M 6:10–8 P.M.; spring—Th 6:10–8 P.M.; summer 1963.)

296 *Seminar in Educational Research* (3) McCauley
Designed to help students analyze scientific approaches to problems in education; evaluate the application of research techniques to typical problems; define, organize, and conduct research studies; and prepare proposals for sponsored research. Required of all candidates for the Doctor of Education degree and open, with permission, to candidates for other advanced degrees. Prerequisite: Education 295 or the equivalent. (Spring—M 8:10–10 P.M.)

297 *Reading in Education* The Staff
To assist those preparing for the comprehensive examinations. No credit toward degree requirements. Tuition fee, $36. (Fall and spring—W 5:10–6 P.M.; summer 1963.)

299–300 *Thesis* (3–3) The Staff
Required of all Master of Arts candidates writing Master's theses. (Academic year —as arranged.)

SPECIAL PROGRAM IN ELEMENTARY TEACHER EDUCATION

The following courses are open only to students in the Special Program in Elementary Teacher Education.

107 *Foundations for Elementary School Teaching* (9) Baker, Rashid, and Staff
A block course, dealing with the history of education, the psychological foundations of elementary education, the nature of elementary education, and the elementary school in our society. The content of traditional courses in educational psychology; history of education; human development, learning, and teaching; society and the school; and introduction to elementary education will be covered. One hundred and thirty-five class hours, supplemented by field experiences. (Summer 1963.)

119 *Elementary School Curriculum* (12) Rashid and Staff
A block course, identifying the essential experiences for the education of elementary school children and working toward initial competence in the methods and materials for providing such experiences. The subject areas of reading, children's literature, communicaton arts, arithmetic, science, social studies, art, music, and physical education are included. One hundred and eighty class hours, supplemented by appropriate observations and field experiences. (Fall—MTWThF 9–12 A.M., 1:30–3:30 P.M.)

230 *Seminar for Interns in Elementary School Teaching* (3) Rashid and Staff
Scheduled weekly meetings for discussion of common problems and for cooperatively planned work on areas of individual and group needs. (Spring—S 9–12 A.M.)

DEPARTMENTS OF PHYSICAL EDUCATION

The following courses are offered by the Department of Physical Education for Men and the Department of Physical Education for Women. Whenever possible the departments offer lecture courses jointly.

FIRST GROUP

41 *Personal Health* (1) Krupa
Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. (Spring —day.)

43–44 *Techniques of Physical Education Motor Activities* (2–2) DeAngelis, Krupa

Fundamental skills, rules, and organization. Physical Education fee,* $4.50 a semester. (Academic year—day.)

45–46 *Teaching Individual and Dual Sports in Secondary Schools* (2–2) (men) Hanken, Krupa

Tennis, golf, swimming, wrestling, badminton, bowling. Physical Education fee,* $4.50 a semester. (Academic year—day.)

47 *Introduction to Physical Education* (2) (men) Myers

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field. (Fall—day.)

48 *Introduction to Recreation* (2) (men) Hanken

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership. (Spring—day.)

49 *Human Anatomy* (3)

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2.† (Fall—day.)

50 *Kinesiology* (3) Lawrence

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy. (Spring—day.)

51–52 *Teaching Physical Education Activities* (2–2) (women) The Staff

Team sports: basketball, hockey, softball, soccer, speedball. Individual and dual sports: tennis, badminton, archery, swimming and diving, lifesaving and water safety. Gymnastics: tumbling apparatus and trampoline. Physical Education fee,* $4.50 a semester. (1963–64 and alternate years: academic year—day.)

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. Prerequisite: Biology 1–2.† (Spring—day.)

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Burtner, Snodgrass

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities. (Fall—day; spring—evening.)

103 *History and Principles of Physical Education* (3) Myers

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education. (Fall—day.)

105–6 *Adapted Physical Education and Physical Examinations* (3–3) Lawrence

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50. (Academic year—day.)

* The Physical Education fee is required for registration in one or more of the activity courses.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

107 *Teaching Recreational Dance* (1 to 2) Burtner, Criddle
Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Physical Education fee,* $4.50. (Fall—day.)

109–10 *Leadership Organization in the Intramural Program* (2–2) (men) DeAngelis
Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college. (Academic year—day.)

111–12 *Teaching Physical Education Activities* (2–2) (women) The Staff
Continuation of methods and materials in activities listed under Physical Education 51–52. Physical Education fee,* $4.50 a semester. (1964–65 and alternate years: academic year—day.)

113–14 *Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) The Staff
Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Physical Education fee,* $4.50 a semester. (Academic year—as arranged.)

115–16 *Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) (men) DeAngelis, Hanken
Football, basketball, baseball, track and field. Physical Education fee,* $4.50 a semester. (Academic year—day.)

117 *Teaching Modern Dance* (1 to 2) Burtner
Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Physical Education fee,* $4.50. (1964–65 and alternate years: fall—day.)

118 *Dance Production* (1 to 2) Burtner
Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Physical Education fee,* $4.50. (1964–65 and alternate years: spring—day.)

121 *School and Community Health Programs* (3) Krupa
Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2.† (Fall—evening.)

122 *Methods and Materials for Health Education* (3) (Spring—evening.) Krupa
Methods and materials for teaching health. Prerequisite: Biology 1–2.†

131 *Tests and Measurements in Physical Education* (3) Snodgrass
Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day.)

132 *Camp Leadership* (1 to 2)
Philosophy and techniques of camp counseling; survey of organization and programs including outdoor education. Also open to both men and women not majoring in Physical Education. (Spring—day.)

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* The Physical Education fee is required for registration in one or more of the activity courses.

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

136 *Survey of Dance History and Dance Forms* (3) Burtner
The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition. (1963–64 and alternate years: spring—as arranged.)

138 *Organization and Administration of Physical Education* (3) Krupa, George
Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs. (Spring—as arranged.)

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Abernethy
First half: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. *Second half:* basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities. (1963–64 and alternate years: academic year—evening.)

161 *Community Organization for Recreation* (3) Thompson
Resources, principles, and methods in organizing community recreation services. (1964–65 and alternate years: fall—evening.)

162 *Administration of Community Recreation Programs* (3) Thompson
Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations. (1964–65 and alternate years: spring—evening.)

REQUIRED AND ELECTIVE COURSES FROM OTHER DEPARTMENTS

PSYCHOLOGY

22 *Introduction to Educational Psychology* (3) J. Johnson
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall—evening; spring—day.)

29 *Child Psychology* (3) E. Johnson
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1963.)

121 *Educational Psychology* (3)
Advanced course in educational psychology. Designed for those with background in education and psychology. (Fall and spring—evening; summer 1963.)

129 *Introduction to Counseling* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. (Fall—evening; summer 1963.)

131 *Psychological Tests* (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. (Fall—evening; spring—day; summer 1963.)

144 *Personnel Psychology* (3) Mosél
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations. (Fall and spring—evening.)

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MADALINE KINTER REMMLEIN, Ph.D., J.D., *Professorial Lecturer in Education*
JAMES FRANKLIN ROGERS, Ph.D., *Professorial Lecturer in Education*
BLAKE SMITH ROOT, A.M., Ed.D., *Professor of Education*
CAROL RUTH ST. CYR, Ph.D., *Associate Professor of Education*
MARY HUGHIE SCOTT, Ed.D., *Associate Professorial Lecturer in Education*
MILDRED HOLLANDER SHOTT, A.M., *Associate Professor of Secretarial Studies*
JEANNE ELLEN SNODGRASS, A.B., M.S. in P.E., *Assistant Professor of Physical Education for Women*
*LORETTA MAY STALLINGS, A.M., *Associate Professor of Physical Education for Women*
JAMES WHITLEY SUBER, A.M., Ed.D., *Associate Professorial Lecturer in Education*
WILLIAM DOVE THOMPSON, A.M., Ed.D., *Associate Professorial Lecturer in Physical Education*
KATHRYN MILDRED TOWNE, A.M., *Professor of Home Economics*
LUVERNE CRABTREE WALKER, A.M., *Associate Professorial Lecturer in Education*
JOHN PATRICK WALSH, M.S., Ed.D., *Professorial Lecturer in Education*
RUDOLPH STUART WESTERLUND, A.M., *Lecturer in Education*
WARD WHIPPLE, A.M., *Lecturer in Education*
HAROLD MAURICE WILSON, A.M., Ed.D., *Professorial Lecturer in Education*
HAZEL EMMA WILSON, A.M., *Associate Professorial Lecturer in Education*

* On sabbatical leave 1963–64.

FIELD STUDIES

Director J. W. Charles, *Assistant Director* M. H. Jessup

FIELD SERVICE COORDINATORS

Alexander Anderson, *Assistant Principal, Washington-Lee High School, Arlington, Va.;* M. F. Maré, *Assistant Principal, Dean of Girls, Wakefield High School, Arlington, Va.;* C. M. Richmond, *Principal, Stratford Junior High School, Arlington, Va.*

COMMITTEES*

THE DEAN'S COUNCIL†

1964: Lyndale George, Kathryn Towne; 1965: Eva Johnson, J. H. Krupa; 1966: W. T. Carroll, Carol St. Cyr

COMMITTEE ON GRADUATE STUDIES†

F. N. Hamblin *(Chairman)*, G. L. Angel, R. E. Baker, W. T. Carroll, H. G. Detwiler, Thelma Hunt, Virginia Kirkbride, W. A. McCauley, B. S. Root, Carol St. Cyr

COMMITTEE ON ADMISSION AND ADVANCED STANDING‡

F. N. Hamblin *(Chairman)*, J. H. Krupa, B. S. Root, J. Y. Ruth, Loretta Stallings, Kathryn Towne

COMMITTEE ON SCHOLARSHIP

B. S. Root *(Chairman)*, V. J. DeAngelis, Helen Lawrence, Kathryn Towne

* The Dean and Assistant Dean of the School of Education are members ex officio of all committees.
† Elected by the Faculty.
‡ Appointed by the Dean.

THE GEORGE WASHINGTON UNIVERSITY

Academic programs leading to degrees are offered in the following colleges and schools:

Columbian College of Arts and Sciences: Associate in Arts (A.A.), Associate in Science (A.S.), Bachelor of Arts (A.B.), Bachelor of Science (B.S.), Bachelor of Science in Medical Technology (B.S. in Med. Tech.), Master of Arts (A.M.), Master of Fine Arts (M.F.A.), and Master of Science (M.S.)

Graduate Council: Doctor of Philosophy (Ph.D.)

School of Medicine: Doctor of Medicine (M.D.)

National Law Center:

Law School: Bachelor of Laws (LL.B.)

Graduate School of Public Law: Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Engineering Technologist Certificate (E.T.C.), Bachelor of Science (B.S.), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

School of Pharmacy: Bachelor of Science in Pharmacy (B.S. in Phar.)

School of Education: Bachelor of Arts in Education (A.B. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Education (A.M. in Ed.), Advanced Professional Certificate (A.P.C.), and Doctor of Education (Ed.D.)

School of Government, Business, and International Affairs: Bachelor of Arts in Government (A.B. in Govt.), Bachelor of Business Administration (B.B.A.), Master of Arts in Government (A.M. in Govt.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

College of General Studies: Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Secretarial Administration (A.Sec.Adm.), Bachelor of Arts (A.B.), Bachelor of Science in Cartography (B.S. in Cart.), Master of Arts (A.M.), Master of Arts in International Affairs (A.M. in I.A.), Master of Business Administration (M.B.A.), Master of International Affairs (M.I.A.), and Master of Public Administration (M.P.A.)

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications should be addressed as indicated.

College of General Studies	Dean of the College of General Studies
Columbian College of Arts and Sciences	Director of Admissions
Division of University Students	Director of Admissions
Fellowships, Scholarships, Prizes, Financial Aid	Chairman, Committee on Scholarships
General Catalogue of the University	Director of Admissions
Graduate Council	Dean of the Graduate Council
Law School and Graduate School of Public Law	Director of Admissions
School of Education	Director of Admissions
School of Engineering and Applied Science	Dean of the School
School of Government, Business, and International Affairs	Director of Admissions
School of Medicine	Admissions Office, School of Medicine
Summer Sessions	Dean of the Summer Sessions
Schedule of Classes: Fall and Spring Semesters	Registrar
Schedule of Classes: Summer Sessions	Dean of the Summer Sessions

THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES [illegible]

THE GRADUATE COUNCIL [illegible]

THE SCHOOL OF MEDICINE [illegible]

THE NATIONAL LAW CENTER 1959

THE LAW SCHOOL 1865

THE GRADUATE SCHOOL OF PUBLIC LAW 1954

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE 1884

THE SCHOOL OF PHARMACY 1926

THE SCHOOL OF EDUCATION 1907

THE SCHOOL OF GOVERNMENT BUSINESS AND INTERNATIONAL AFFAIRS 1928

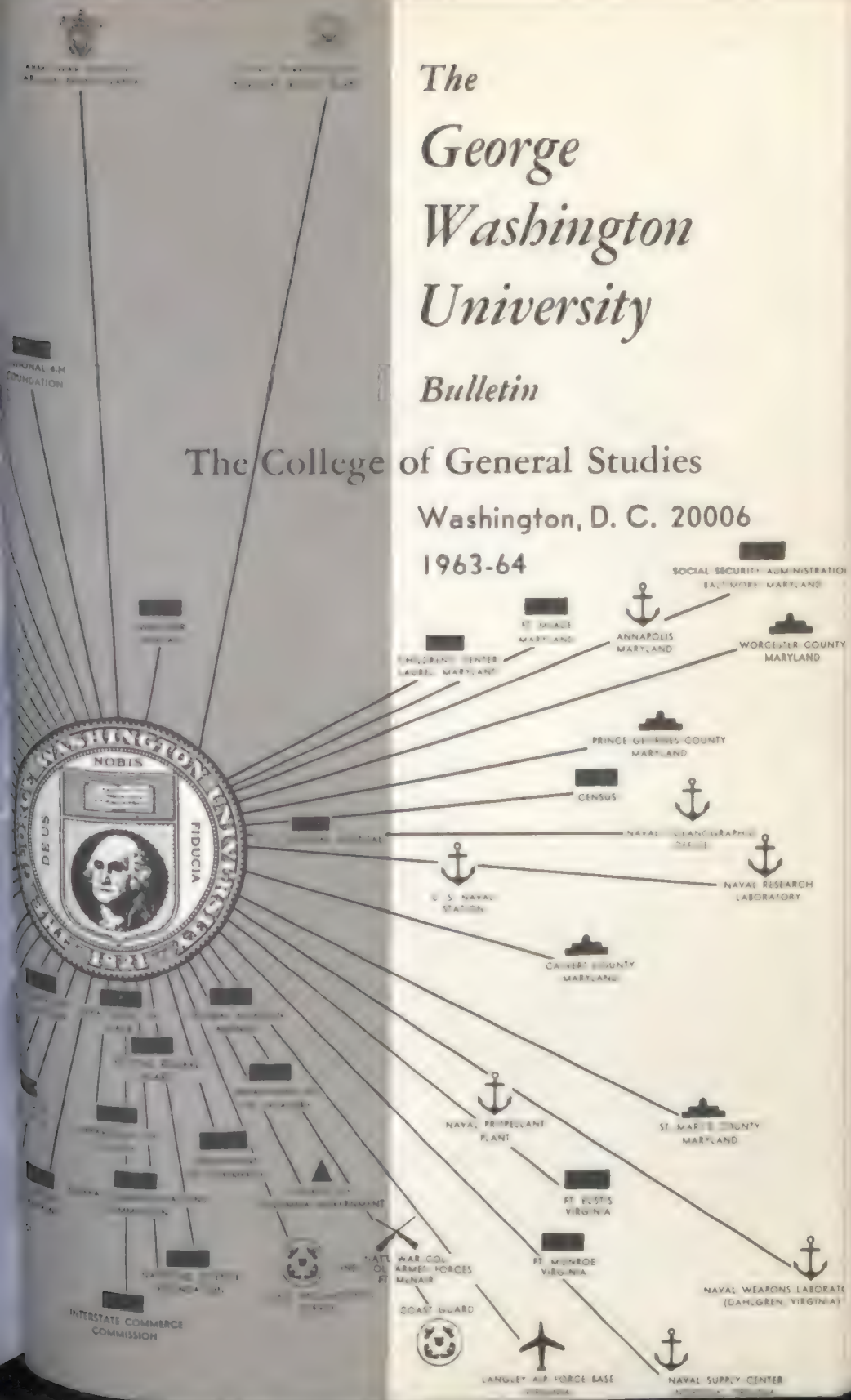
THE COLLEGE OF GENERAL STUDIES 1952

THE DIVISION OF UNIVERSITY STUDENTS 1930

THE DIVISION OF AIR SCIENCE 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL 1898



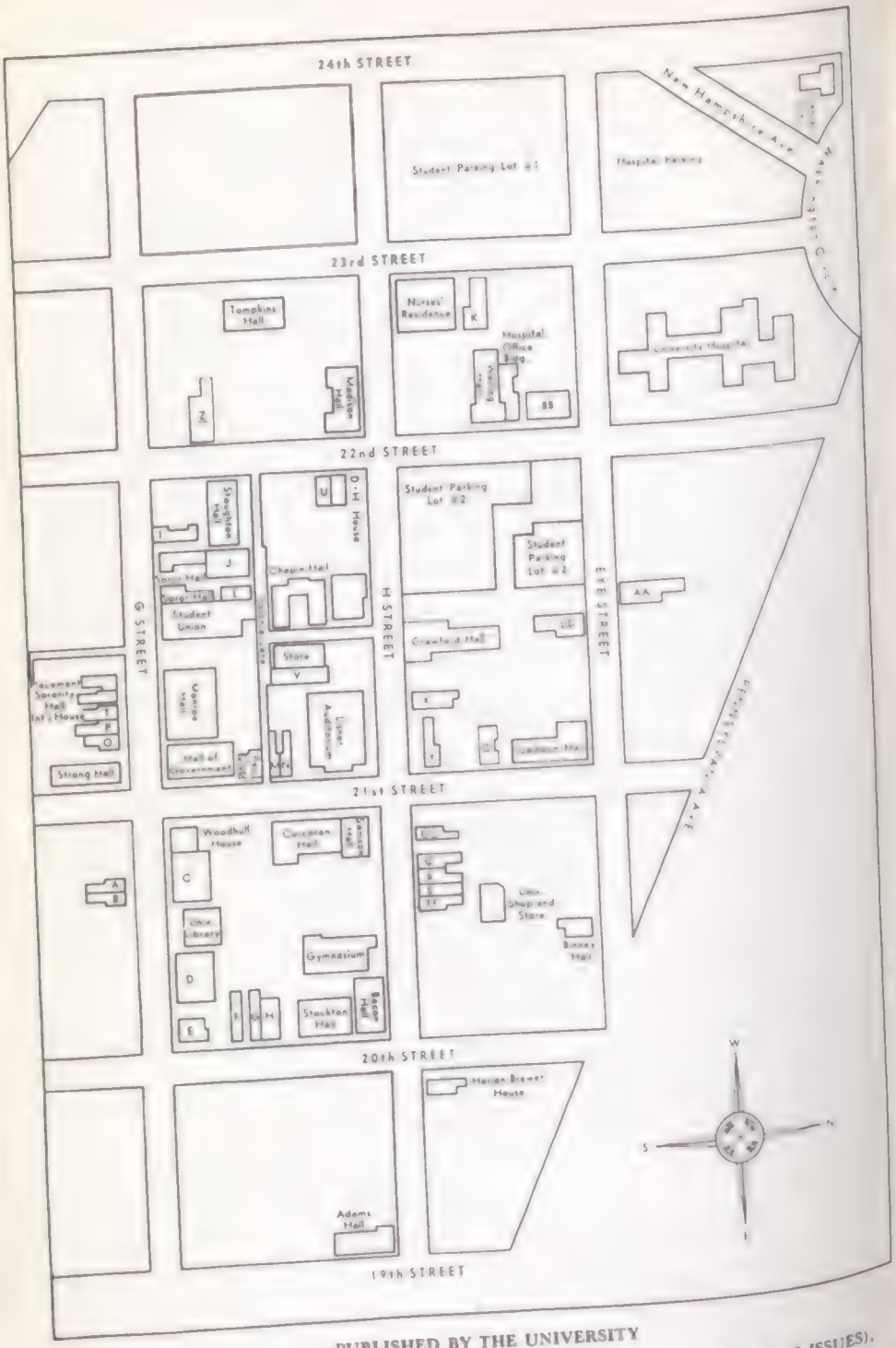
The George Washington University

Bulletin

The College of General Studies

Washington, D. C. 20006

1963-64



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The George Washington University Bulletin

THE COLLEGE OF GENERAL STUDIES
1963-64

VOLUME LXII AUGUST 1963 NUMBER 16

1963

July

S	M	T	W	T	F	S
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August

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September

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October

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November

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December

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1964

January

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March

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May

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June

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July

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August

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September

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October

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November

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December

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27	28	29	30	31	....	....

COLLEGE OF GENERAL STUDIES CALENDAR 1963-64*

1963

FALL SEMESTER:

Off-Campus registration†; classes begin	Sept 2–27	Mon–Fri
Application for Feb graduation due in Registrar's Office		
Columbian College of Arts and Sciences advising: freshmen, sophomores, new students	Sept 11–18	Wed–Wed
Orientation Assembly: all new students On-Campus	Sept 13	Fri
Curriculum assemblies: new On-Campus students attend one	Sept 13 and 16	Fri and Mon
Placement tests for On-Campus students	Sept 16	Mon
Registration on Campus†	Sept 19–21‡	Thurs–Sat
Application for Feb graduation due in Registrar's Office		
Classes begin on Campus	Sept 23	Mon
CGS meeting of Staff of Instruction, Monroe 102, 8:30 P.M.	Oct 4	Fri
Subjects of Master's theses of Feb candidates due in Dean's Office	Oct 4	Fri
Veterans Day (holiday)	Nov 11	Mon
Thanksgiving recess	Nov 28–30	Thurs–Sat
Master's comprehensive examinations	Dec 6 and 7	Fri and Sat
Graduate Record examinations	Dec 14	Sat
Christmas recess	Dec 21–Jan 1	Sat–Wed

1964

On-Campus classes resume	Jan 2	Thurs
Master's theses of Feb candidates due in Dean's Office	Jan 2	Thurs
Off-Campus registration†; classes begin	Jan 13–Feb 7	Mon–Fri
Application for June graduation due in Registrar's Office		
Last day of Campus fall-semester classes	Jan 15	Wed
On-Campus examination period	Jan 20–25	Mon–Sat
Placement tests	Jan 27	Mon

* Off-Campus courses in the College of General Studies may be organized upon request at any time during the year.

† Application for degree, for Graduate Record Examination, and for comprehensive examination is the responsibility of the student and must be made at the time of registration for the last classes required for the degree concerned.

‡ Thursday and Friday, from 12:00 to 8:00 P.M.; Saturday, from 10:00 A.M. to 1:00 P.M.

SPRING SEMESTER:

Registration on Campus†	Jan 30–Feb 1‡ ..... Thurs–Sat
Application for June graduation due in Registrar's Office	Feb 3 ..... Mon
Classes begin on Campus	Feb 7 ..... Fri
Subjects of Master's theses of June candidates due in Dean's Office	Feb 8 ..... Sat
CGS meeting of Staff of Instruction, Monroe 102, 10:30 A.M.	Feb 22 ..... Sat
Winter Convocation (holiday)	March 23–28 ..... Mon–Sat
Spring recess	April 3 and 4 ..... Fri and Sat
Master's comprehensive examinations	April 11 ..... Sat
Graduate Record examinations	May 1 ..... Fri
Master's theses of June candidates due in Dean's Office	May 20 ..... Wed
Last day of Campus spring-semester classes	May 21 ..... Thurs
Education and Training Officers Luncheon, Lisner Lounge, 12:30 P.M.	May 23–29 ..... Sat–Fri
On-Campus examination period	May 30 ..... Sun
Memorial Day (holiday)	June 7 ..... Sun
Baccalaureate Service	June 7 ..... Sun
Commencement	

SUMMER SESSIONS:

Registration for first 5-week session	June 15 ..... Mon
First-session classes begin	June 16 ..... Tues
Independence Day (holiday)	July 4 ..... Sat
First-session classes end	July 20 ..... Mon
First-session examination day	July 21 ..... Tues
Registration for second 5-week session	July 23 ..... Thurs
Second-session classes begin	July 24 ..... Fri
Second-session classes end	Aug 27 ..... Thurs
Second-session examination day	Aug 28 ..... Fri

REGISTRATION ON CAMPUS FALL SEMESTER

1964–65	Sept 17–19 ..... Thurs–Sat

† Application for degree, for Graduate Record Examination, and for comprehensive examination is the responsibility of the student and must be made at the time of registration for the last classes required for the degree concerned.

‡ Thursday and Friday, from 12:00 to 8:00 P.M.; Saturday, from 10:00 A.M. to 1:00 P.M.

THE COLLEGE OF GENERAL STUDIES

GENERAL INFORMATION

The College of General Studies was established in 1950.

The objectives of the College of General Studies are to extend the educational facilities of the University; to introduce experimental programs of study for mature students; and to provide auxiliary educational services other than formal programs of study.

In addition to degree-granting programs it also conducts institutes, conferences, and special noncredit projects. Offices are in building F at 706 Twentieth Street NW.

ACADEMIC STANDARDS

The staff of instruction is made up of members of the regular University Faculty and staff of instruction and other individuals of recognized academic and professional competence.

All academic standards of the University are maintained in off-campus credit courses.

Limits on the size of classes may be imposed in order to maintain the quality of instruction.

The College of General Studies is a member of the Association of University Evening Colleges and the National University Extension Association.

OFF-CAMPUS STUDY

The College of General Studies works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training, in response to increased demands of government, education, business, and industry. Programs are also offered for service personnel who wish to work toward degrees or for professional proficiency. Off-Campus Centers are listed on pages 45–68.

TYPES OF PROGRAMS

The College offers courses in liberal arts, education, and business administration on the college or university level for which there is a sufficient demand and for which a qualified instructor can be found, regardless of whether such courses are included in the regular offering of the University. According to the subject matter and the wish of the organizing group, courses are arranged as credit courses applicable toward a degree or as noncredit courses. For information concerning arrangements for courses or comprehensive programs of study, Telephone 965-2350 or write to The College of General Studies, The George Washington University, Washington, D. C. 20006.

PROFESSIONAL IN-SERVICE TRAINING

Special programs are offered to meet the in-service needs of special groups and others will be developed as the need arises.

HOW TO ORGANIZE A PROGRAM

Any organization, group, installation, or agency interested in having the University organize and conduct a course or a comprehensive educational program, should get in touch with the Assistant Dean (Administration) of the College of General Studies, Telephone 965-2350. A representative will be sent upon request to discuss organizational plans.

TELEVISION COURSES

During the academic year 1962–63, the College of General Studies, in cooperation with "Continental Classroom" and WTOP-TV Channel 9, offered a two-semester course in economics, *The American Economy*. The course was taught by Dr. John R. Coleman, Professor of Economics, Head of the Department of Economics, Carnegie Institute of Technology, and was telecast to more than 180 colleges and universities throughout the United States. Each semester of the course carried three hours credit. The registration fee did not include the cost of textbooks and telecourse guide materials. The course was scheduled for Monday through Friday from 6:30 to 7 A.M., throughout the academic year.

During the fall of 1962 the College of General Studies, in cooperation with the National Naval Medical Center, offered a credit and noncredit television course in psychology, *Human Adjustment in Hospital Setting*, to a closed circuit network consisting of the Naval Medical Center, Walter Reed Army Medical Center, the National Institutes of Health, the Air Force Hospital at Andrews Air Force Base, the Army Hospital at Fort Belvoir, the Army Hospital at Fort George Meade, and the Army Hospital at Fort Detrick. The course was scheduled for Monday, Wednesday, and Friday from 12:10 to 1:00 P.M. The registration fee included the cost of textbook and telecourse materials.

Additional television courses may be offered from time to time. For further information, consult Olive Jean McKay, Staff Assistant (Continuing Education), College of General Studies, 706 Twentieth Street NW.; telephone: 965-2350.

The coordinator for television programs is Lillian Brown, Director of Radio and Television, Building DD, Room 10, 2120 Eye Street NW.; FEderal 8-0250, Extension 370.

RADIO COURSES

In cooperation with WTOP AM and FM in Washington, D. C., the College of General Studies has offered noncredit courses in Conversational French, Russian, and Spanish. The registration fee included the cost of textbook and radio course materials.

Additional radio noncredit courses may be offered from time to time. For further information, consult Olive Jean McKay, Staff Assistant (Continuing Education), College of General Studies, 706 Twentieth Street NW.; telephone: 965-2350.

The Coordinator for radio courses is Lillian Brown, Director of Radio and Television, Building DD, Room 10, 2120 Eye Street NW.; FEderal 8-0250, Extension 370.

CAMPUS STUDY

Off-campus degree candidates may register for campus courses approved for their programs, if these courses are not conveniently available at off-campus centers.

Service personnel who wish to study full-time at the University and who have only limited time under military orders in which to complete their programs of study may

register for campus courses through the College of General Studies if they meet the following requirements. Permission of the Dean is required for concurrent enrollment in off-campus courses.

1. The applicant must be in attendance under official orders which give him a specified time in which to finish his degree requirements.

2. He must prove that the degree requirements can be completed in the time specified in his orders only by taking advantage of the advanced standing provisions of this College.

3. He must be in a position to enroll for full-time study.

By special arrangement with the Department of the Navy, naval personnel may attend the University as full-time students for a maximum of five semesters. Academic adviser: Dr. John Francis Latimer, Building E, Room 300; FEderal 8-0250, Extension 494.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 30 semester hours of work in advanced management and supporting fields through the educational facilities of the School of Government, Business, and International Affairs for a selected group of Air Force officers. Those officers who qualify, by a combination of academic background and the satisfactory completion of this program can be awarded a Bachelor's degree by the College of General Studies. Officers who already hold Bachelor's degrees may take these courses for graduate credit toward the Master of Arts degree. Campus coordinator and academic adviser: Dr. Waldo Sommers, Hall of Government, Room 205 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 404 or 588.

For administrative counseling, consult Dr. James Grady Brown, Assistant Dean (Administration) of the College of General Studies, 706 Twentieth Street NW.; Telephone: 965-2350.

ADMISSION

Registration in an off-campus course constitutes admission to that course only. Admission to off-campus courses does not constitute admission to degree candidacy or to campus courses of the University. Courses which carry college credit, however, may count toward a degree in any school or college of the University provided: (1) the student is accepted as a degree candidate in the school or college from which the degree is sought and (2) the course meets the requirements of the particular curriculum chosen by the student and is approved by the appropriate dean. Credits for these courses may also be transferred to other colleges or universities.

CREDIT COURSES

Registration is conducted before or at the first meeting of each class. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications indicate that they are able to complete the courses successfully.

Auditing.—With the permission of the instructor, adequately prepared students

may register as "Auditors". An auditor is not required to take active part in the exercises or to take examinations. No grades will be reported, and no credit will be received. Tuition is the *same* as for credit courses. If a course has 15 sessions a student may, with the approval of the Dean, change from credit to audit status prior to the 10th class session. If a course has 30 sessions, a student may, with the approval of the Dean, change from credit to audit status prior to the 20th class session. A student will not be permitted to change from audit to credit status after the second class session of any course.

Concurrent Registration.—A student registered as a degree candidate in any other college or school of the University may take credit courses in the College of General Studies *only by permission (granted prior to registration) of the dean* of the college or school concerned. The Concurrent Registration form, available at the Office of the College of General Studies, must be filled in by the student, signed by the dean of the college or school concerned, and submitted *with the registration form.*

Service personnel enrolled full time for campus courses need the Dean's permission to register concurrently for off-campus courses.

NONCREDIT COURSES

Noncredit courses are open to anyone interested in enrolling. When a course is organized at the request of a particular agency or group, admission may be restricted to the students recommended by the sponsoring organization.

DEGREE CANDIDACY

Application for degree candidacy should be made only if there is a reasonable assurance that the student will be in the area long enough to complete the requirements. Credits granted by this College for service schools and correspondence courses may or may not be accepted by another institution or by other schools and colleges of this University.

The following factors are considered in determining the eligibility of an applicant:

1. The adequacy of previous academic work as preparation for the course of study contemplated, including quantity and quality of work and the standing of the institution in which it was done.
2. Results of specified tests, when prescribed by the Committee on Undergraduate Admission and Advanced Standing.
3. The aptitude of the student for the curriculum contemplated.
4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who, for any other reason, would not be an acceptable student.

METHODS OF ADMISSION

FROM SECONDARY SCHOOLS

An applicant from a secondary school may seek to qualify for admission to degree candidacy by certificate or examination. In either case, the applicant must send the high school record form, available at the Office of the Director of Admissions or at

the College of General Studies, to his high school principal with the request that the principal fill it out and mail it directly to the Office of the Director of Admissions, The George Washington University, Washington, D. C. 20006.

Consideration for admission is based upon the combined evidence of (1) an acceptable certificate of graduation, showing a minimum of fifteen "units"* from an accredited secondary school; (2) the principal's statement that the applicant is adequately prepared to undertake college work with reasonable prospect of success; (3) the results of College Entrance Examination Board scores submitted on the Scholastic Aptitude Test (for students over twenty-one years of age appropriate tests may be prescribed); and (4) course work completed with the College of General Studies prior to making application for admission. (See Special Requirements for Admission to Degree Candidacy.)

Certification by the principal that the student has satisfied all curriculum requirements of the school will be accepted in lieu of any prescribed distribution of units.

A desirable secondary school program in preparation for college would include: four years of English, at least two years of one foriegn language, two years of natural or physical science with laboratory instruction (beyond "General Sciences"), two or three years of social studies (with concentration on history), one or two years of mathematics.

The College of General Studies Committee on Undergraduate Admission and Advanced Standing will consider the adequacy of the qualifications for academic success of an applicant who, because of unusual circumstances, does not present all the formal requirements stated above.

FROM HIGHER INSTITUTIONS

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree in the College of General Studies, subject to the curriculum requirements of the degree program for which admission is sought. Work of low passing grade (such as *D* or the equivalent) is not acceptable for transfer. However, a course on which a grade of *D* has been received may be used to satisfy the curriculum requirement, but may not be counted toward the total number of semester hours required for the degree.

The University reserves the right to refuse credit for transfer in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

It is the responsibility of the student to have an official transcript sent directly from each educational institution formerly attended to the Office of the Director of Admissions, The George Washington University, Washington, D. C. 20006.

If the transcript of record from a higher institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record from the principal of the secondary school.

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* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 60-minute periods of prepared classroom work.

SPECIAL REQUIREMENTS FOR ADMISSION TO DEGREE CANDIDACY

To be eligible for admission to degree candidacy the student must have satisfactorily completed 6 semester hours of approved academic work in the College of General Studies. Application for degree candidacy should be filed as soon as the required 6 hours are satisfactorily completed.

Twelve semester hours of acceptable work are required of applicants whose previous college records might make admission questionable. A grade of *C* or better is required for such qualifying courses toward undergraduate degrees; for Master's candidacy an average of *B* or better is required for undergraduate prerequisite courses, *S* (satisfactory) or *E* (excellent) for graduate courses.

Students must confer with the Assistant Dean (Administration) or a Field Representative of the College of General Studies before applying for admission to degree candidacy. Appointments may be made by telephone (965-2350) or by letter.

ADVANCED STANDING

In addition to credit allowed in transfer from other accredited colleges or universities, see "From Higher Institutions", a maximum of 30 semester hours of advanced standing may be obtained by any combination of the following methods. For detailed information concerning advanced standing acceptable in the curriculum contemplated, see "Advanced Standing" under the degree concerned.

1. Service Schools

A maximum of 30 semester hours may be obtained on the basis of service schools satisfactorily completed, as evaluated by the United States Armed Forces Institute Guide to the Evaluation of Educational Experience in the Armed Forces. Ordinarily such credits are counted as electives. No credit will be allowed for military experience as such.

2. Validating Examinations

A maximum of 30 semester hours may be obtained by validating examinations. With the approval of the Dean or the Assistant Dean and the department concerned, permission to take such examinations is granted those who are qualified by work experience and background. Validating examinations must be completed during the first calendar year in which the student is registered as a degree candidate. The fee for each three-hour course examination is $48.

3. Correspondence Courses

A maximum of 15 semester hours may be earned through the successful completion of correspondence courses of college level which are on the approved list of The George Washington University.

EXAMINATION FOR WAIVING CURRICULUM REQUIREMENTS

During the first full semester of degree candidacy, a student wishing to omit a required course may, with the permission of the Dean, take a waiver examination, the passing of which relieves him of the curriculum requirement and qualifies him for registration in an advanced course. *Passing of the waiver examination does not entitle the student to credit toward a degree.* The fee for each three-hour course examination is $5.

FEES

(All fees should be paid by check or money order)

Application fee (degree candidate) nonrefundable	$15.00
Graduation Fees	
Associate in Arts, Associate in Science, Associate in Secretarial Administration	10.00
Bachelor's or Master's degrees	25.00
Tuition Fees	
On-campus:	
Full-time program (12 to 18 hours), each semester*	550.00
Part-time program or hours in excess of 18, for each semester hour*	36.00
Off-campus:	
For each semester hour for which a student registers†	24.00
The Education Program of the Armed Forces may defray a maximum of $13.50 a semester hour, for service personnel.	
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in the College of General Studies. (For procedure, see Graduate Record Examination, page 17)	10.00
Fee for binding the Master's thesis	6.00
Withdrawal fee, charged in special cases	5.00
Reinstatement fee, for reinstatement after financial suspension	5.00
Residence fee, off-campus degree candidate, to maintain "in residence" status during any semester of absence from the University‡	24.00
Residence fee, on-campus degree candidate, to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements‡	36.00
Fee for each examination to waive a curriculum requirement	5.00
Validating Examination fee	48.00
Transcript fee, charged for each transcript of record	1.00

PAYMENT OF FEES

OFF-CAMPUS COURSES

For fifteen-week credit courses

Students not receiving tuition assistance ..... Payable in 3 equal installments: the first at time of registration; the second, 30 days after the beginning of the course; the third, 60 days after the beginning of the course.

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* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered "in residence" during this period. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† Except in War College programs.

‡ Payment of the residence fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The residence fee applies toward neither financial nor residence requirements for the degree.

Students receiving tuition assistance.....Payable in 2 equal installments: the first at time of registration; the second, 30 days after the beginning of the course.
For eight-week credit course.....Payable in full at registration
For noncredit course.....Payable in full at registration

Financial Suspension.—A student who fails to meet tuition payment when due is automatically suspended and may not attend classes until he has been officially reinstated and paid all accrued fees and a $5 reinstatement fee.

CAMPUS COURSES

For regulations governing the payment of fees for Campus courses, see the appropriate catalogue of the University.

REFUND OF FEES

OFF-CAMPUS COURSES

In no case will a refund of fees be made for eight-week credit courses or for noncredit courses unless the course is cancelled.

Fifteen-week credit course.—In no case will the first third of the tuition cost be refunded unless the course is cancelled. Two-thirds of the total charge will be waived or refunded if the course is dropped within the first 30 days. One-third of the total cost will be waived or refunded if the course is dropped within the second 30 days. No refund will be allowed on withdrawal subsequent to the second 30-day period. In no case will tuition be reduced or refunded because of nonattendance upon classes.

This regulation does not apply if a student withdraws from one course to enter another, or if a class is cancelled because of insufficient enrollment.

CAMPUS COURSES

For regulations governing refund of fees for Campus courses, see the appropriate catalogue of the University.

REGULATIONS

AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 24 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a se-

mester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

The student is held responsible to the instructor in charge of the course for all of the work of the course. All absences must be excused before provision will be made for the student to make up work missed.

Absences will be excused if the number of class hours missed does not exceed the semester hours for the course. In a fifteen-week course in which classes meet once a week, *one* unexcused absence is permitted. In a fifteen-week course in which classes meet twice a week, *two* unexcused absences are permitted. In an eight-week course meeting twice a week, *one* unexcused absence is permitted.

Absences immediately preceding or following holiday periods are counted double.

Excuses for two or more consecutive class periods, and for absences from examinations which have been announced in advance, may be obtained only by making written application to the instructor.

INDEPENDENT STUDY PLAN

A student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study and readings under the personal direction of an instructor, in accordance with the rules of the department or departments concerned.

SCHOLARSHIP

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors or the administrative staff of the College.

Undergraduate Grading System.—A, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be assigned. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the work of the course. An "incomplete" cannot be made up after the lapse of one calendar year, except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*.

A student may not repeat, for a grade, a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Dean by the appropriate departmental chairman.

Graduate Grading System.—E (excellent), *S* (satisfactory), *U* (unsatisfactory), *I* (incomplete), *W* (authorized withdrawal), and *CR* (indicates thesis credit).

QUALITY-POINT INDEX

Quality points are computed from grades as follows:

For each semester hour of the letter grade—*A*, 4 points; *B*, 3 points; *C*, 2 points; *D*, 1 point; *F*, no points.

Scholarship is computed in terms of the quality-point index. This is done by dividing the total number of quality points by the total number of semester hours for which the student has registered. Example: if a student received an *A* in one three-credit course, and a *B* in another three-credit course, he would compute his quality-point index in this way:

A = 4 x 3 (semester hours) = 12
B = 3 x 3 (semester hours) = 9

6 — 21 ÷ 6 = 3.5 quality-point index

Courses marked *W* or *I* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at other institutions are not considered in computing the quality-point index.

WARNINGS

At stated intervals during the academic year instructors file in the Office of the College of General Studies the names of those students taking courses with departmental numbers below 100, who are doing work of *D* grade or lower. A "warning" will then be sent to the student. A "warning" constitutes notice to the student that he must consult his instructor and his adviser at the earliest opportunity. "Warning periods" are established during the seventh and eighth weeks of fifteen-week courses, and during the third and fourth of eight-week courses.

PROBATION

A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student who has attempted 12 or more semester hours of work and whose quality-point index is between 1.50 and 2.00 will be placed on probation for the period in which he attempts 12 additional semester hours of work. If his quality-point index is still below 2.00 at the end of this probationary period he will be suspended. The Committee on Scholarship reserves the right to extend the period of probation even if the student has earned an average of above 2.00. A student placed on probation for a third period, whether successive or after an interval, will be suspended.

SUSPENSION*

A student who has attempted 12 or more semester hours of work and whose quality-point index is below 1.50 is subject to suspension; however, a student who has a quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. In applying for readmission he must submit specific evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

* For Financial Suspension see "Payments of Fees," pages 11–12.

READMISSION

A student who withdraws, is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return. Forms for readmission may be obtained from the Office of Admissions of the University. Complete and official transcripts from each institution the student has attended since making his previous application must be sent to the Office of the Director of Admissions before his application for readmission can be evaluated.

CHANGES IN PROGRAM OF STUDIES

DROPPING A COURSE OFF-CAMPUS

Courses meeting once or twice a week for 2½ hours may be dropped without academic penalty during the first 10 class periods, and courses meeting once or twice a week for 1¼ hours may be dropped without academic penalty during the first 20 class periods.

Withdrawing from a course without academic penalty after the 10th or 20th class meeting, as the case may be, requires approval of a written request, which should be addressed to the Dean of the College of General Studies.

Procedure for dropping courses.—An *Off-Campus* drop slip (obtainable from the instructor, training officer, or the College of General Studies) must be filled out; signed and dated by the instructor; and submitted, in person or by mail, to the College of General Studies, 706 Twentieth Stret NW., Washington, D. C. 20006.

Notifying an instructor of the intention to drop a course does not *constitute an official withdrawal.* Failure to follow the proper procedure will result in an automatic grade of *F* and, regardless of the time of discontinuance, will not relieve the student of financial responsibility for the entire course. (See "Refund of Fees" page 12.)

DROPPING A CAMPUS COURSE

A *Campus* drop slip (available at the Office of the Dean) must be filled out; signed and dated by the instructor; and submitted in person or by mail to the College of General Studies, 706 Twentieth Street N.W., Washington, D. C. 20006.

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

TRANSFER WITHIN THE UNIVERSITY

Transfer to the College of General Studies, as a degree candidate, from another college, school, or division of the University may be made only with the approval of the deans concerned. Application for transfer should be made on the transfer form, which is available at the Office of the Director of Admissions. An insert form, obtainable at the College of General Studies, must also be filled out. Upon

* The University work week is Monday through Friday, inclusive.

transfer the student should consult the Dean and understand clearly the requirements he must fulfill.

A maximum of 45 semester hours is transferrable toward an Associate's degree; 90, toward a Bachelor's degree; and 18, toward a Master's degree. Students transferring within the University are advised to note the residence requirements of the degree sought.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the College of General Studies.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not take the same course later for credit.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No certificate of work done will be issued for a person who does not have a clear financial record.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the College, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—It is the student's responsibility to file an application for graduation when registering for the last semester of course work needed to complete the degree requirements. This form should be attached to the final registration forms or mailed to the College of General Studies. The graduation fee should not be included; the student will be billed by the Cashier prior to Commencement.

Students expecting to complete, during the Summer Sessions, requirements for degrees to be conferred at the February Convocation, must apply for graduation as a part of registration for the Summer Sessions.

Scholarship.—The undergraduate must have a general quality-point index of 2.00. Candidates for the Bachelor's degrees must, in addition, have a quality-point index of 2.50 in the major. The graduate student must attain a grade of *E* (excellent) in at least 6 semester hours of the total course requirements for the degree and the grade of *S* (satisfactory) in all other courses.

Curriculum.—See the requirements for the degree concerned.

Residence.—A student is "in residence" only when registered for course work after making application for admission to degree candidacy or for the 6 semester hours

undertaken to qualify for degree candidacy (see the specific residence requirements for the degree concerned).

The student who has completed his tuition requirements, but whose graduation is deferred for any reason must maintain "in residence" status by paying the residence fee for the semester immediately preceding the graduation at which he expects to receive his degree.

If there is an interruption in the residence status, the student must apply for readmission to degree candidacy and meet any changes in curriculum which have been made since his original admission.

With the permission of the Dean, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each semester he is absent. For the purpose of this regulation, the summer session will be disregarded.

By special arrangement, service personnel who receive military transfers when they are within 6 hours of a degree, may be permitted to complete their work elsewhere, transfer these credits to the College of General Studies, and receive a degree from this University. This procedure does not apply to Master's candidates who have been granted 6 hours of transferred credit.

Students who complete degree requirements during the Summer Sessions and are cleared for February graduation by the Registrar are not required to register "in residence" for the fall semester.

Graduate Record Examination.—During the senior or final year candidates for the Bachelor's degrees in the College of General Studies are required to take the Graduate Record Examination: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. The examinations are conducted by the University twice a year: the Fall Testing Session (December 14, 1963) for students graduating in February, and the Spring Session (April 11, 1964) for those graduating in June. Students expecting to complete degree requirements during the Summer Sessions should take the examination in the Spring Session.

As a part of registration for the final semester of undergraduate study, each student is responsible for applying for the Graduate Record Examinations. Application is to be made on the appropriate form and sent to the Assistant Dean (Administration), College of General Studies, together with a check or money order for $10, made out to The George Washington University.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission, students who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis.—A thesis, submitted in partial satisfaction of requirements for the Master's degree, must be submitted in its final form to the Dean no later than the date specified in the calendar. Three complete copies of each thesis are required. It is the responsibility of the candidate for a graduate degree to obtain from the Dean a printed copy of the regulations governing the styling and reproduction of the thesis. These regulations are rigidly enforced. (See page 32.)

Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

Graduation in Absentia.—Application for graduation in absentia must be submitted to the Dean.

HONORS

Dean's List.—To be eligible for inclusion on the Dean's List, a student must be a candidate for an undergraduate degree in the College of General Studies. Course work taken while the application for admission is being processed and the 6 semester hours required prior to making application will be computed in determining eligibility for the Dean's List. A full-time degree candidate must have a minimum quality-point index of 3.50 for the semester concerned; a part-time degree candidate must have a quality-point index of 3.50 on the last 12 semester hours of work and must have maintained continuous registration for at least one three-hour course during the period concerned. Eligibility for inclusion again will be determined on the basis of the subsequent 12 semester hours of work.

With distinction.—The undergraduate degrees may be conferred "with distinction", at the discretion of the Dean's Council of the College and the Committee on Scholarship of the University, if a student attains a quality-point index of 3.50 or higher on all work taken at this University. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.
4. To be eligible for honors a student must have completed at this institution at least one-half of the academic course work required for the degree.

DISHONESTY

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Dean's Council) for subsequent registration in any unit of the University.

Evidence of dishonesty on the part of any student will result in his suspension by the Dean upon recommendation of the Dean's Council.

A student found guilty of dishonesty will be suspended for a stated period and will be deprived of credit for all courses in which he is enrolled during the semester in which the dishonest act occurs. A disciplinary grade of "Failure—Academic Dishonesty" will be recorded for each such course, and this grade will be employed in computation of the quality-point index.

If a student suspended because of academic dishonesty should be readmitted, he may be required to repeat for grade all courses for which a disciplinary grade has been recorded, and both the grade earned on repetition and the disciplinary "Failure —Academic Dishonesty" grade will be employed in computation of the quality-point index.

THE LIBRARY

A student registered in the College of General Studies is entitled to the reference use of the University Library. A library card is issued to each student.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

VETERANS EDUCATION

The personnel of the Office of the Dean of Men, Building Q, 2029 H Street NW., act as advisers to veterans and war orphans and in a liaison capacity between the University and the Veterans Administration. This Office should be consulted concerning educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D. C.

Students eligible under one of the state laws should also contact this Office.

PUBLIC LAW 634 (War Orphans' Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration.

PUBLIC LAW 190 (World War II GI Bill Extension)

The educational benefits for World War II veterans terminated July 25, 1956, except for persons eligible under special enlistment provision.

PUBLIC LAW 550 (Korean GI Bill)

To be eligible, a veteran must have been in service between June 27, 1950 and January 31, 1955, no longer be on active duty, and have begun his education within three years after separation. Such students have eight years from separation or January 31, 1965, whichever is earlier, to use their benefits.

Application for benefits to the Veterans Administration should be made as early as possible; V.A. approval should be presented to the veterans adviser from the Office of the Dean of Men during the registration procedure.

PUBLIC LAWS 16 AND 894 (Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

COUNSELING

Students in the College of General Studies may obtain counseling and assistance in program planning in the offices of the College or from Field Representatives at the installations and agencies at which courses are held. Appointments may be made by calling the College of General Studies: Telephone 965-2350; or through the Education or Training Officer at individual installations. University counselors are also available at all installations and agencies during announced registration periods and, in the installations and agencies, at a scheduled time each month.

TESTING AND COUNSELING CENTER

In addition, the services of The George Washington University Testing and Counseling Center are available to all students in the College of General Studies. The counseling services are designed to assist individuals in making educational and vocational plans. The program requires 30 hours of testing, scheduled in a series of three or four appointments. During this time, information concerning past expe-

rience, general ability, interest, personality, aptitudes, and achievement is obtained. Test results are interpreted and their implications discussed with the client. The Center is prepared to furnish related occupational and educational information. Clients are referred for specialized services when required. Follow-up is provided if requested.

The services offered by the Center include: aid in vocational choice; checking present training objectives; diagnosis of academic difficulties; checking suitability of present job; and special testing services.

Fees.—Except for specialized testing, the fee covers testing and counseling based on the results of the tests. For students who are currently registered as degree candidates in the University, the fee is $10; for students currently enrolled in the University but not as degree candidates, the fee is $40; for graduates of the University, $40; for community clients, $65. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

Appointments may be made by phone, mail, or in person. The Center is open from 9:00 to 5:00 Monday through Friday. The office is in Building N, 718 Twenty-first Street NW., Washington, D. C. 20006. Telephone: FEderal 8-0155 (or FEderal 8-0250, Extension 463).

THE ASSOCIATE'S DEGREES

Four Associate's curricula are available: the Associate in Arts curriculum which constitutes the first two years of the Bachelor of Arts curriculum (see pages 22–23) and the three Terminal Curricula—(1) Associate in Arts with a major in Accounting, (2) Associate in Science, (3) Associate in Secretarial Administration.

Students who plan to continue working in this College toward the Bachelor's degree must apply to the Dean upon completion of requirements for the degree of Associate in Arts (which is optional). Forms for this purpose are available at the Office of the Registrar and the College of General Studies.

After completing the College of General Studies requirements for the degree of Associate in Arts, students may wish to transfer to one of the other schools or colleges within the University, or they may wish to transfer to another institution. However, modifications in admission, advanced standing, and curriculum requirements permitted by the College of General Studies may not be accepted in transfer. Therefore, while registered in the College of General Studies, students should meet the requirements of the college or university to which they wish to transfer. The entrance requirements of the colleges and schools of the University are stated in the separate catalogues of the University, which are available at the Office of the Director of Admissions.

ADVANCED STANDING

A maximum of 30 semester hours of advanced standing toward the degrees of Associate in Arts and Associate in Secretarial Administration may be earned, as explained in detail on page 10.

REQUIREMENTS FOR THE DEGREES

A minimum of 50 per cent of the work for the degree must be completed off campus; a maximum of 50 per cent may be completed on campus.

Degree candidates wishing to enroll in campus courses, must secure permission from the Dean of the College of General Studies at least two weeks prior to the date of campus registration. This regulation is rigidly enforced.

RESIDENCE

At least the last 15 semester hours for the degree must be completed while registered as a degree candidate (see pages 16–17) in the College of General Studies. The 6 semester hours required prior to admission to degree candidacy are accepted in partial satisfaction of the residence requirement, if the courses are approved as part of the student's degree program (see page 10).

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 13–14. For regulations concerning probation, suspension, and readmission, see pages 14–15.

CURRICULUM

The satisfactory completion of 60 semester hours is required, as outlined in one of the following curricula.

Associate in Arts Curriculum

The following curriculum leads to the degree of Associate in Arts and constitutes the first half of the Bachelor of Arts curriculum. For the second half, see pages 26 and 27.

Faculty Adviser: James Grady Brown, A.M., Ed.D., Assistant Dean (Administration) of the College of General Studies. Building F (706 Twentieth Street NW.), Telephone: 965-2350.

	Semester Hours
English 1 (or 1X)–2: English Composition	6
English 41–42: Introduction to World Literature; 51–52: Introduction to English Literature; 71–72: Introduction to American Literature; or Philosophy 51–52: Introduction to Philosophy	6
*Foreign Language	12

* A student offering for admission four acceptable high school units in one foreign language or two units in each of two foreign languages is not required to take any foreign language. (A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of classroom work.) If he offers two units only, he must complete the entire second-year college course in the same language or the first-year college course in another language. The usual college requirement is two years of a single language, but since many College of General Studies students may subsequently be stationed abroad, some familiarity with two foreign languages may be particularly useful. Therefore students may take one year each of two different foreign languages. Those who transfer to other institutions will probably have to take two years of one language and should be guided accordingly.

The high school units accepted under the above arrangements remove the college language requirement, but, do not count for college credit.

Social Studies: from economics, history, political science, sociology and anthropology, or Geography 51 and 52. Six hours in one department are required	6
Science: Chemistry 3–4: Fundamentals of Physical Science, or an introductory course in biology†, geology, or physics (if arrangements cannot be made to offer such courses off campus, students may take these courses on campus)	6 or 8
Elective	22 to 24
Total	60

Terminal Programs

The following two-year terminal curricula are designed for students who do not wish to extend their college education beyond two years.

ASSOCIATE IN ARTS CURRICULUM

In Accounting

The advanced standing possible in this curriculum is limited to 6 semester hours of electives.

Faculty Adviser: John Coughlan, B.Comm., Ph.D., Associate Professor of Accounting. Hall of Government, Room 100 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 243, 610

	Semester Hours
Acct 1–2: Introductory Accounting	6
Acct 101: Cost Accounting	3
Acct 111: Financial Statement Analysis	3
Acct 121–22: Intermediate Accounting	6
Acct 161: Income Tax Accounting	3
Acct 171: Auditing	3
Acct 181: Accounting Systems	3
Acct 191: Advanced Accounting	3
Acct 193: Business Budgeting	3
BA 131: Business Finance	3
BA 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162: Commercial Law: Negotiable Instruments, Property, Mortgages	3
Econ 1–2: Principles of Economics	6
Engl 1 (or 1X)–2: English Composition	6
Elective (To be selected with the approval of the adviser)	6
Total	60

ASSOCIATE IN SCIENCE CURRICULUM

The curriculum leading to the degree of Associate in Science in the field of Physical Sciences is offered by the College of General Studies and on campus by Columbian College of Arts and Sciences. Students who have taken courses in this curriculum at installations where the entire program is not available may, if they meet the entrance requirements, transfer to Columbian College of Arts and Sciences to complete the curriculum.

No credit toward the degree will be granted for service schools or correspondence

† An interdepartmental course offered by the departments of Botany and Zoology. Students may register in either department.

schools. All students interested in continuing the study of physical science toward a Bachelor's degree should consult the Dean or Assistant Deans of the College of General Studies.

Faculty Adviser: Robert Whittington Eller, B.S., Ed.D., Assistant Dean (Special Projects) of the College of General Studies. Building F (706 Twentieth Street NW.), Telephone 965-2350

	Semester Hours
Ap S 3: Graphical Communications	3
Chem 11–12: General Chemistry	8
Chem 21: Qualitative Inorganic Analysis	4
Engl 1 (or 1X)–2: English Composition	6
Engl 11: The Writing of Reports	3
*Math 3: College Algebra	3
*Math 6: Plane Trigonometry	3
Math 21: Calculus I	3
Math 22: Calculus II	3
Math 23: Calculus III	3
Math 24: Calculus IV	3
Physics 11: Introductory Physics	3
Physics 14, 15, 16: General Physics	9
Electives (Speech 1: Effective Speaking (3) and Economics 1–2: Principles of Economics (3–3) are recommended)	6
Total	60

ASSOCIATE IN SECRETARIAL ADMINISTRATION CURRICULUM

This curriculum is designed for secretarial students who, in addition to obtaining the degree of Associate in Secretarial Administration, wish to prepare for the Certified Professional Secretaries' Examination for the certificate issued by the Institute for Certifying Secretaries, a body of the National Secretaries Association, International.

The status of applicants with academic work taken at another institution will be established on application for degree candidacy.

Faculty Adviser: James Grady Brown, A.M., Ed.D., Assistant Dean (Administration) of the College of General Studies. Building F (706 Twentieth Street NW.), Telephone: 965-2350.

	Semester Hours
Acct 1–2: Introductory Accounting	6
BA 102: Fundamentals of Management	3
BA 109: Office Management	3
Econ 1–2: Principles of Economics	6
Engl 1 (or 1X)–2: English Composition	6
Engl 41–42: Introduction to World Literature;	
Engl 51–52: Introduction to English Literature; or	
Engl 71–72: Introduction to American Literature	6
Psych 1: General Psychology	3
Sec Studies 2: Intermediate Typewriting	3
Sec Studies 11: Elementary Shorthand and Transcription	3
Sec Studies 12: Intermediate Shorthand and Transcription	3
Sec Studies 15: Advanced Shorthand, Typewriting, and Transcription	3
Sec Studies 16: Secretarial Shorthand, Typewriting, and Transcription	3
Sec Studies 51: Business Correspondence	3

* The Mathematics 3 requirement may be satisfied by two years of acceptable high school algebra; the Mathematics 6 requirement, by one-half year of high school trigonometry.

Sec Studies 54: Secretarial Practice	3
Speech 1: Effective Speaking or Speech 11: Voice and Diction	3
Stat 51: Introduction to Business and Economic Statistics (3), or Statistics 101: Basic Principles of Statistical Methods (3)	3
Total	60

THE BACHELOR'S DEGREES

Programs are offered which lead to the degrees of Bachelor of Arts, Bachelor of Business Administration, and Bachelor of Science in Cartography.

Bachelor of Arts

Work leading to the degree of Bachelor of Arts is available according to two types of programs: (1) with a major in the General Studies Curriculum and (2) with a departmental major. Many courses required for departmental majors are available only on campus.

REQUIREMENTS FOR ADMISSION TO CANDIDACY

The degree of Associate in Arts in the College of General Studies, or the equivalent, and the permission of the Dean (see page 10) are required. Admission to Bachelor's candidacy after receiving the degree of Associate in Arts is not automatic. With the permission of the Dean, students with limited deficiencies in the requirements for admission may be conditionally admitted to degree candidacy while they make up academic deficiencies.

Students with acceptable college records from other institutions must complete 6 semester hours, with the grade of *C* or better, before applying for degree candidacy.

Students with questionable previous college records may be accepted on probation, in an "unclassified" status, to complete 24 semester hours, with the grade of *C* or better, before final consideration of degree candidacy.

A conference concerning plans for study is required of each applicant for admission to candidacy. Appointments may be made with the Assistant Dean (Administration) or a Field Representative (Telephone: 965-2350).

ADVANCED STANDING

In addition to credit allowed in transfer from other accredited colleges or universities, see "From Higher Institutions", page 9, advanced standing may be obtained by validating examinations, service schools, and correspondence courses. From any combination of these sources, the maximum credit that may be obtained is 30 semester hours. The maximum credit obtained from any one of these sources may not exceed that stated on page 10. No credit may be obtained in this way, however, if the student has been credited with the maximum of 30 semester hours toward the degree of Associate in Arts.

REQUIREMENTS FOR THE DEGREE

RESIDENCE

The last 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the College, unless special permission is granted by the Dean to take work elsewhere. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work and the 6 hours required prior to admission to degree candidacy (if approved as part of the degree program) may be counted in residence, but in no case may the period of residence aggregate less than 30 weeks. For regulations governing military students who are transferred when they are within 6 semester hours of their degree, see page 17.

Transfers.—Transfer students from other universities who have partially or substantially met the major requirements are required to complete satisfactorily 12 semester hours of approved work in the major field in the College of General Studies. This work will count as part of the minimum (30 semester hours) residence requirement. (For regulations concerning transfer within the University, see pages 15–16.)

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 13–14. For regulations concerning probation, suspension, and readmission, see pages 14–15

To remain in good standing, a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in his major.

CURRICULUM

The satisfactory completion of 60 semester hours, as set forth in one of the following curricula, is required.

GENERAL STUDIES CURRICULUM

Preregistration counseling is recommended to adapt this curriculum to the student's objectives or employment responsibilities and aims. For appointments call the College of General Studies, Telephone 965-2350.

Students planning to work toward a Master's degree in Columbian College of Arts and Sciences; the School of Government, Business, and International Affairs; or the School of Education are advised to plan their programs of study toward the Bachelor's degree so that they will meet the prerequisite requirements of the school or college of their choice.

Candidates for the degree of Bachelor of Arts registered in the General Studies Curriculum select courses, approved by the Dean or Assistant Deans, from two of the following divisions, one of which constitutes the major and the other the minor.

Faculty Adviser: James Grady Brown, A.M., Ed.D., Assistant Dean (Administration) of the College of General Studies. Building F (706 Twentieth Street NW.), Telephone: 965-2350

1. ***The Division of Languages and Literatures.***—The departments of Art, Classical Languages and Literatures, English, Germanic Languages and Literatures, Journalism, Romance Languages and Literatures, and Slavic Languages and Literatures.

2. ***The Division of Mathematics and Physical Sciences.***—The departments of Chemistry, Geology, Mathematics, Physics, and Statistics.
3. ***The Division of the Natural Sciences.***—The departments of Botany, Microbiology, Physiology, Psychology, and Zoology.
4. ***The Division of the Social Sciences.***—The departments of Economics, Education*, Geography and Regional Science, Government and Business, History, International Affairs, Philosophy, Political Science, Religion, Sociology and Anthropology, and Speech.

	Semester Hours
Major division	24
(Courses are to be selected, with the approval of the adviser, from appropriate fields of study listed in the student's major division. Eighteen of the required 24 hours must be in courses with departmental numbers above 100.)	
Minor division	12
(Courses are to be selected, with the approval of the adviser, from appropriate fields of study listed in the student's minor division.)	
Elective	24
Total (of which at least 30 semester hours must be in courses with departmental numbers above 100)	60

DEPARTMENTAL MAJORS

Students who elect a major of the type offered in Columbian College of Arts and Sciences and the School of Government, Business, and International Affairs should consult the catalogue of the appropriate school for requirements of a given major. Any deviation from these requirements must be approved by the chairman of the department concerned and the Dean of the College of General Studies.

Bachelor of Business Administration Curriculum

Faculty Adviser: George Conner, M.B.A., Assistant Professor of Business Administration. Hall of Government, Room 411 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 531

The following curriculum leading to the degree of Bachelor of Business Administration is available to students in the College of General Studies only. Entrance and advanced standing requirements are the same as those stated on page 10. Residence and scholarship requirements for the degree are the same as those for the degree of Bachelor of Arts (see page 26).

	Semester Hours
Acct 1–2: Introductory Accounting	6
Acct 193: Business Budgeting	3
Anthro 1, Soc 2, or Psych 8	3
Anthro 1: Man, Culture, and Society I (3)	
Soc 2: Man, Culture, and Society II (3)	
Psych 8: Psychology of Adjustment (3)	
BA 101: Introduction to Business	3
BA 102: Fundamentals of Management	3
BA 105: Personnel Management	3
BA 131: Business Finance	3
BA 141: Principles of Marketing	3

* Only 12 semester hours of professional education courses may be applied towards a Bachelor of Arts degree in the College of General Studies.

BA 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
BA 162: Commercial Law: Negotiable Instruments, Property, Mortgages	3
BA 198: Case Problems in Management	3
Econ 1–2: Principles of Economics	6
Econ 121: Money and Banking	3
Engl 1 or 1X, 2: English Composition	6
*Foreign Language, Literature, or Science	6–8
Engl 51–52: Introduction to English Literature (3–3)	
Engl 71–72: Introduction to American Literature (3–3)	
Engl 91–92: Introduction to European Literature (3–3)	
Chem 3–4: Fundamentals of Science (4–4) or	
Physics 11, 12: Introductory Physics (3–3)	
Math 15, 16: Finite Mathematics I–II	6
Pol Sc (1 and 9, 1 and 10, 9–10)	6
Pol Sc 1: Introduction to Government (3)	
Pol Sc 9–10: Government of the United States (3–3)	
Psych 1: General Psychology	3
Stat 51: Introduction to Business and Economic Statistics	3
†Elective (Speech is recommended, students interested in Foreign Commmerce include Geography 52)	28–30
	105
‡Group Option.....(To be selected from one of the following groups)	15
Total	120

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

Group Option†.—The selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the faculty adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

Composed of courses in Accounting, Business Administration, Economics, and Statistics.

Group II—Personnel

Composed of courses in Business Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

Composed of courses in Accounting, Business Administration, Economics, Political Science, and Statistics.

Group IV—Marketing, Procurement, and Production

Composed of courses in Business Administration, Economics, Geography, and Statistics.

Group V—Controllership

Composed of courses in Accounting, Business Administration, and Economics.

Group VI—Economics

Composed of courses in Economics and Business Administration.

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* This option applies only to students in the College of General Studies. This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language or it may be satisfied by completing the second college year of a foreign language.

† To be selected in consultation with faculty adviser.

‡ Lists of courses suggested for each option may be obtained from the Assistant Dean (Administration) of the College of General Studies or the Chairman of the Department of Government and Business.

Group VII—Statistics

Composed of courses in Statistics.

Group VIII—Transportation and Public Utilities

Composed of courses in Business Administration, Economics, Geography, History, and Statistics.

Group IX—Automatic Data Processing

Composed of courses in Accounting, Applied Science, Business Administration, Economics, Engineering, Mathematics, and Statistics.

Bachelor of Science in Cartography

The College of General Studies offers a four-year curriculum designed to prepare students for the degree of Bachelor of Science in Cartography.

ENTRANCE REQUIREMENTS

The entrance requirements are the same as those stated on pages 8–10, with the exceptions noted below under "Advanced Standing."

ADVANCED STANDING

Thirty semester hours of credit may be granted upon the successful completion of validating examinations. No credit will be given for correspondence schools or service schools.

REQUIREMENTS FOR THE DEGREE

The residence and scholarship requirements for the degree of Bachelor of Science in Cartography are the same as those stated on page 26 for the degree of Bachelor of Arts.

CURRICULUM

To be recommended by the faculty for graduation, candidates for the degree of Bachelor of Science in Cartography are required to complete the following curriculum of 130 semester hours.

Faculty Adviser: Robert John Alexander, M.S., Associate Professorial Lecturer in Cartography. Building I, Room 202 (2135 G Street NW.), FEderal 8-0250, Extension 287 or 298

	Semester Hours
Cart 1: Map Interpretation	3
Cart 11: Cartographic Drafting and Descriptive Geometry	3
Cart 12: Topographic Surveying	3
Cart 13: Higher Surveying	3
Cart 17–18: Elementary Photogrammetry	6
Cart 110: Map Projections	2
Cart 111: Map Reproduction	1
Cart 155: Elementary Geodesy	3
Cart 156: Geodetic Astronomy	3
Cart 160: Theory of Errors and Geodetic Adjustments	3
Cart 191–92: Map and Chart Construction	6
Chem 11–12: General Chemistry	8

Engl 1 or 1X: English Composition	3
Engl 2: English Composition	3
Geog 51: Introduction to Geography	3
Geog 52: World Regions	3
Geog 115–16: Physical Geography	6
Geog 124: Land Capabilities	3
Geog 125: Transportation Complexes	3
Geol 105–6: Fundamentals of Geophysics	6
Math 21: Calculus I	3
Math 22: Calculus II	3
Math 23: Calculus III	3
Math 24: Calculus IV	3
Math 111: Mathematics for Engineers and Physicists I	3
Math 112: Mathematics for Engineers and Physicists II	3
Oceanog 101–2: Introductory Oceanography	6
Phys 11: Introductory Physics	3
Phys 14: General Physics	3
Phys 15: General Physics	3
Phys 16: General Physics	3
Social Studies: (any one of the following two-semester courses)	6
Econ 1–2: Principles of Economics (3–3)	
Hist 39–40: The Development of European Civilization (3–3)	
Hist 71–72: The Development of the Civilization of the United States (3–3)	
Pol Sc 9–10: Government of the United States (3–3)	
Anthro 1, Soc 2: Man, Culture, and Society (3–3)	
Elective	14
Total	130

THE MASTER'S DEGREES

Master of Arts curricula in the fields of Financial Management, Governmental Administration, and Personnel Administration are offered for adults with successful work experience who find it essential to take most of their graduate studies off-campus. Installations where this degree program is available are indicated under the section in this Catalogue related to Off-Campus Centers, see pages 45–68. Courses leading to this degree may be offered elsewhere as the demand warrants. Additional curricula will be established when the need becomes apparent.

All the work in these three curricula may be taken off-campus. If it should become necessary, up to 50 per cent of the courses may be taken on campus. In all cases the University standards for graduate study are maintained.

A curriculum leading to the degree of Master of Arts in International Affairs is offered for the students and faculty of the Air War College, the Army War College, the National War College, the Naval War College, and the Central Intelligence Agency.

A curriculum leading to the degree of Master of Science in Business Administration is offered for students and faculty at the Industrial College of the Armed Forces, the Command and Staff College of Air University, and military and civilian employees of the Army at Fort Belvoir, Virginia.

A curriculum leading to the degree of Master of Science in Public Administration is offered for students and faculty at the Command and Staff College of Air University.

Graduate students who plan to work toward Master's degrees in another school or college of the University may enroll for graduate courses in the College of General Studies with the approval of the dean of the school or college in which they are enrolled. In the School of Government, Business, and International Affairs and the School of Education, a maximum of 6 hours of *approved* off-campus work will be accepted at the time of matriculation for the degree and 6 additional hours of approved courses will be permitted off-campus after matriculation.

COUNSELING SERVICE

An advisory service, which is the joint responsibility of the agency sponsoring the program and the University, is available to all Master's candidates. Regular members of the Faculty of the University are available as curriculum advisers in the various specialized fields.

REQUIREMENTS FOR ADMISSION TO DEGREE CANDIDACY

To be admitted to degree candidacy the applicant must have (1) an approved Bachelor's degree (120 semester hours, which conform essentially to the requirements for a Bachelor's degree in the College of General Studies) from an accredited higher institution; (2) credit (totaling 6 semester hours), with the grade of *B* (undergraduate) or *S* (graduate), for two courses approved by the academic adviser and taken in the College of General Studies prior to admission to candidacy*; and (3) a quality-point index of 3.00 (*B*) in the undergraduate major. If the applicant's work history gives evidence of more competence than his previous academic record indicates, he may be admitted to candidacy on the basis of satisfactory completion of 12 semester hours of work approved by his academic adviser, acceptable results of scholastic aptitude tests, or both.*

ADVANCED STANDING*

A maximum of 6 semester hours of advanced standing may be credited toward the degree by transfer of credit for approved graduate work taken at an accredited college or university.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

Of the required semester hours of graduate work for the degree, a minimum of 24, which may include the thesis (6 semester hours), must be completed while registered as a degree candidate in the College of General Studies, except in the case of transfers within the University, who are required to have 12 hours of residence in the College of General Studies as degree candidates.

SCHOLARSHIP

The grade of *E* (excellent) must be attained in each 15 semester hours of the course requirements for the degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon

* Not applicable to candidates for the degrees of Master of Arts in International Affairs, Master of Science in Business Administration, or Master of Science in Public Administration in the War Colleges' programs.

recommendation of the Committee on Scholarship. A Master's candidate who has accumulated more than 6 semester hours of *U* (unsatisfactory) will be automatically suspended. Regarding the system of grading, see page 13.

THESIS

Theses are required of candidates for the degrees of Master of Arts in International Affairs, Master of Science in Business Administration, and Master of Science in Public Administration.

With the approval of the adviser, a thesis may be substituted for six hours of elective credit toward the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration. (See pages 17–18.)

The thesis subject must be approved by the director of the thesis and the faculty adviser and presented to the Dean no later than the date announced in the calendar.

The thesis in its final form must be approved by the director of the thesis and the faculty adviser and presented to the Dean no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If preparation of the thesis extends beyond the two-year period the student must register for it again and pay tuition on the same basis as for a repeated course.

COURSE SUBSTITUTION

For any course substitution it is the responsibility of the student to get written approval from the faculty adviser and the Dean prior to registration. Forms for requesting course substitution are available at the College of General Studies.

COMPREHENSIVE EXAMINATIONS

The Master's candidate is required to pass a written Comprehensive Examination. The examinations are conducted at the University: December 6 and 7, 1963, for students graduating in February 1964; April 3 and 4, 1964, for students graduating in June 1964. At the time of the examination he may be required to submit to the examination committee copies of articles published, pertinent staff studies, reports, etc., prepared during the period of graduate study, as additional evidence of Master's competency.

Master of Arts

The following programs of study are effective for all students admitted to Master's candidacy subsequent to September 1, 1963. Students admitted prior to September 1, 1963, are permitted to continue the program of studies in effect on the date of admission.

PREREQUISITE

A student must meet the general requirements for admission to degree candidacy as listed on pages 30–31. If he does not submit an acceptable undergraduate degree with a *B* average, or receive a grade of "Excellent" on two of the first four courses, he will be required to take additional course work as approved by the faculty adviser.

PLANS OF STUDY

Two plans of study lead to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration. *Plan I* requires a minimum of 30 semester hours of graduate credit, including a thesis of 6 hours. *Plan II* requires a minimum of 33 semester hours of graduate credit, including a 3 semester hour course in Research Methods.

FINANCIAL MANAGEMENT

Faculty Adviser: Karl Ernest Stromsem, Ph.D., Professor of Public Administration. Hall of Government, Room 206 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 493

REQUIRED COURSES

The student must complete course work as approved by the Faculty Adviser from the following courses:

	Semester Hours
Acct 211–12: Managerial Accounting	6
BA 296: Seminar in Controllership	3
BPA 201: Advanced Administrative Management	3
BPA 207: Human Relations in Administration	3
BPA 268: Management Engineering	3
PA 213: Administration in Government	3
PA 251: Governmental Budgeting	3
PA 252: Seminar in Planning and Programming	3
Stat 101: Basic Principles of Statistical Methods or BPA 204: Quantitative Factors in Administration	3

Plan I	*Semester Hours*
Required courses	24
BA 299–300: Thesis	6
Total	30

Plan II	*Semester Hours*
Required courses	30
BPA 295: Research Methods	3
Total	33

ELECTIVE COURSES

A student whose previous background makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses, with the written approval of his faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed under the Personnel Administration Master's program (page 35). In exceptional cases, the faculty adviser may approve other courses as electives.

GOVERNMENTAL ADMINISTRATION

Faculty Adviser: Harry Robert Page, M.B.A., Assistant Professor of Business Administration. Hall of Government, Room 205 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 404 or 588

REQUIRED COURSES

		Semester Hours
BPA 201:	Advanced Administrative Management	3
BPA 206:	Personnel Management	3
BPA 207:	Human Relations in Administration	3
BPA 268:	Management Engineering	3
PA 213:	Administration in Government	3
PA 251:	Governmental Budgeting	3
PA 252:	Seminar in Planning and Programming	3
PA 260:	Seminar in Policy Formulation and Administration	3

Plan I	*Semester Hours*	**Plan II**	*Semester Hours*
Required courses	24	Required courses	24
BA 299–300: Thesis	6	BPA 295: Research Methods	3
		Elective	6
Total	30	Total	33

ELECTIVE COURSES

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses, with the written approval of the faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed under the Personnel Administration Master's program on page 35. In exceptional cases, the faculty adviser may approve other courses as electives.

PERSONNEL ADMINISTRATION

Faculty Adviser: Joe Lee Jessup, M.B.A., Professor of Business Administration. Hall of Government, Room 204 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 543

REQUIRED COURSES

The student must complete at least one course in each of the five major areas:

	Semester Hours
1. *Personnel Principles*	
BA 209: Seminar in Personnel Management	3
BPA 206: Personnel Management	3
2. *Human Relations and Motivation*	
BPA 207: Human Relations in Administration	3
Psych 245: Seminar: Employee Motivation and Morale	3
3. *Labor Relations*	
Econ 241: Unionism, Collective Bargaining, and Labor Economics	3
Econ 244: Problems in Unionism, Collective Bargaining, and Labor Economics	3

4. *Management*

BPA 201: Advanced Administrative Management 3

5. *Quantitative Methods*

BPA 204: Quantitative Factors in Administration..... 3
Stat 101: Basic Principles of Statistical Methods..... 3

Plan I	*Semester Hours*
Required courses	15
Elective	9
Thesis: BA 299–300, PA 299–300, or Psych 299–300.....	6
Total.....	30

Plan II	*Semester Hours*
Required courses	15
Elective	15
BPA 295: Research Methods.....	3
Total.....	33

ELECTIVE COURSES

A student whose previous background makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser. A form for this purpose is available at the College of General Studies. Electives may be selected from courses listed below. In exceptional cases, the faculty adviser may approve other related courses as electives.

	Semester Hours
BPA 205: Seminar in Communication and Executive Action.....	3
BPA 268: Management Engineering	3
BPA 287: Relation of Government to Business.....	3
BA 210: The Personnel Manager.....	3
BA 218: Survey of Data Processing.....	3
BA 288: Executive Leadership.....	3
BA 291: Seminar in Business Management.....	3
BA 297: Case Studies in Business Administration.....	3
PA 211: Problems of Governmental Organization.....	3
PA 221: Staff Functions in Government.....	3
PA 232: Federal Personnel Procedures.....	3
PA 233: Seminar in Manpower Development and Utilization.....	3
PA 251: Governmental Budgeting	3
PA 261: Public Opinion and the Administrator.....	3
PA 272: Seminar in Public Personnel Administration.....	3
PA 298: Case Studies in Public Administration.....	3
Econ 246: Foreign Labor Movements.....	3
Ed 257: Occupational and Educational Information.....	3
Ed 258: Techniques of Counseling.....	3
Ed 263: Employee Training	3
Psych 131: Psychological Tests	3
Psych 144: Personnel Psychology	3
Psych 209: Seminar: Psychology of Motivation.....	3
Psych 231: Test Construction	3
Psych 244: Seminar: Job Analysis and Evaluation.....	3
Psych 246: Seminar: Personnel Measurement Techniques.....	3
Psych 254: Seminar: Group Dynamics	3
Psych 255: Seminar: Techniques of Opinion and Attitude Measurements.....	3
Psych 264: Sensitivity Training: Human Relations Laboratory Course.....	3
Psych 265: Theory and Design in Human Relations Training.....	3
Stat 104: Statistics in Psychology and Education.....	3

The Degree of Master of Arts in International Affairs

Faculty Adviser: Benjamin Nimer, Ph.D., Associate Professor of Political Science, Hall of Government, Room 411 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 542

This is a special degree program offered in cooperation with the Air War College, Air University, Maxwell Air Force Base, Alabama; the Army War College, Carlisle Barracks, Pennsylvania; the National War College, Fort McNair, Washington, D. C.; and the Naval War College, Newport, Rhode Island. It is open only to current students and faculty and to graduates eligible under the contractual arrangements.

PREREQUISITE

An approved Bachelor's degree from an accredited college or university.

REQUIRED COURSES

	Semester Hours
Pol Sc 260: Fundamentals of National Power*	3
Pol Sc 261: International and United States Foreign Policy*	3
Pol Sc 262: National Security Policy of the United States*	3
Pol Sc 299–300: Thesis	6
Elective (from the following or related courses as approved by the faculty adviser)	15
Econ 251: Economic Development (3)	
Hist 246: Seminar in Eurasian History (3)	
Pol Sc 172: International Organization: the United Nations (3)	
Pol Sc 212: Seminar: Comparative Government and Politics (3)	
Pol Sc 283: Topics in International Law (3)	
Pol Sc 285: Diplomacy since World War II (3)	
Soc and Anthro 263: Culture, Contact, and Change (3)	
Total	30

The Degree of Master of Science in Business Administration

These special degree programs are offered in cooperation with the Industrial College of the Armed Forces, Fort McNair, Washington, D. C.; the Command and Staff College, Air University, Maxwell Air Force Base, Alabama; and at Fort Belvoir, Virginia.

PREREQUISITE

An approved Bachelor's degree from an accredited college or university.

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Faculty Adviser: James Carlton Dockeray, Ph.D., Professor of Finance. Hall of Government, Room 201 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 512, 539

Open only to current students and faculty and to graduates of the classes of 1958 through 1960 of the Industrial College of the Armed Forces.

* War Colleges' curricula only.

REQUIRED COURSES

	Semester Hours
Acct 215: Survey of Managerial Accounting	2
BPA 201: Advanced Administrative Management	2
BPA 207: Human Relations in Administration	2
BPA 280–81–82: Managerial Aspects of National Security*	9
BA 235: Financial Management	2
BA 241: Advanced Marketing Management	2
BA 297: Case Studies in Business Administration	2
BA 299–300: Thesis	6
Econ 217: Survey of Economics	3
Total	30

ELECTIVE COURSES

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

AIR UNIVERSITY

Faculty Adviser: David MacKenzie Faulkner, M.B.A., Assistant Professor of Business Administration. Building 823, Room 9 (Maxwell Air Force Base, Alabama), Telephone: 265-5621, Extension 86113 or 86194

Open only to current students and faculty of the Command and Staff College.

REQUIRED COURSES

	Semester Hours
Acct 215: Survey of Managerial Accounting	2
BPA 201: Advanced Administrative Management	2
BPA 207: Human Relations in Administration	2
BPA 280–81: Managerial Aspects of National Security†	8
BA 235: Financial Management	2
BA 241: Advanced Marketing Management	2
BA 297: Case Studies in Business Administration	2
BA 299–300: Thesis	6
Econ 217: Survey of Economics	2
Stat 101: Basic Principles of Statistical Methods	2
Total	30

ELECTIVE COURSES

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

FORT BELVOIR

Faculty Adviser: James Carlton Dockeray, Ph.D., Professor of Finance. Hall of Government, Room 201 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 512 or 539

* Industrial College of the Armed Forces curriculum only.
† Command and Staff College, Air University curriculum only.

Open only to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Belvoir and the Chairman of the Department of Government and Business.

PREREQUISITE

A student must meet the general requirements for admission to degree candidacy as listed on pages 30–31. In addition, he must have 9 hours of mathematics; one course each in Accounting, Business and Public Administration, and Statistics; and two courses in Economics.

REQUIRED COURSES	*Semester Hours*
BPA 201: Advanced Administrative Management	3
BPA 204: Quantitative Factors in Administration	3
BPA 207: Human Relations in Administration	3
BA 299–300: Thesis	6
(A) Area of Concentration	9
(B) Elective	6
Total	30

A. Area of Concentration*

A student must complete one of the three following areas of concentration:

(1) BA 218: Survey of Data Processing (3)
BA 227: Linear Programming (3)
BA 228: Introduction to Operations Research for Management (3)

(2) BA 219: Digital Computer Programming Concepts (3)
BA 220: Comparative Digital Computer Systems (3)
BA 221: Application of Digital Computers (3)

(3) BA 218: Survey of Data Processing (3)
BA 228: Introduction to operations Research for Management (3)
BPA 268: Management Engineering (3)

B. Elective*

In addition to an area of concentration a student may select 6 semester hours of courses primarily, but not exclusively, from the following:

Acct 215: Survey of Managerial Accounting (3)
Acct 293: Budget Preparation and Administration (3)
BA 250: Contract Administration (3)
Stat 207: Operations Analysis (3)
Stat 271–72: Statistical Information Theory (3–3)

The Degree of Master of Science in Public Administration

AIR UNIVERSITY

Faculty Adviser: David MacKenzie Faulkner, M.B.A., Assistant Professor of Business Administration. Building 823, Room 9 (Maxwell Air Force Base, Alabama), Telephone: 265-5621, Extension 86113 or 86194

This is a special degree program offered in cooperation with the Command and Staff College, Air University, Maxwell Air Force Base, Alabama. It is open only to current students and faculty of the Command and Staff College.

* The area of concentration and all electives must be approved by the faculty adviser.

PREREQUISITE

A Bachelor's degree from an accredited college or university.

REQUIRED COURSES	*Semester Hours*
Acct 215: Survey of Managerial Accounting	2
BPA 201: Advanced Administrative Management	2
BPA 207: Human Relations in Administration	2
BPA 280–81: Managerial Aspects of National Security*	8
PA 213: Administration in Government	2
PA 251: Governmental Budgeting	2
PA 252: Seminar in Planning and Programming	2
PA 298: Case Studies in Public Administration	2
PA 299–300: Thesis	6
Stat 101: Basic Principles of Statistical Methods	2
Total	30

ELECTIVE COURSES

A student whose previous academic preparation makes it unnecessary for him to take all of the prescribed courses in this program may substitute elective courses with the written approval of the faculty adviser.

INSTITUTES, CONFERENCES, AND SPECIAL PROJECTS

The College of General Studies offers a wide variety of institutes and conferences. Many of these conferences are held at Airlie House, in arrangement with the Airlie Foundation, whose facilities are situated near Warrenton, Virginia.

Among these conferences is a Program in American Studies which was inaugurated in the spring of 1962 with a series of conference-seminars for students and leaders from other countries visiting the United States under Department of State grants. The principal objective of the series is to present an over-all view of our country today, synthesizing its history, politics, economy, and culture through informal discussions led by outstanding authorities in the various fields.

In addition to the Program in American Studies, professional conferences and workshops have been organized.

For further information consult Robert Whittington Eller, B.S., Ed.D., Assistant Dean (Special Projects), College of General Studies, Building F, 706 Twentieth Street NW.; FEderal 8-0250, Extension 688; or 965-2350.

* Command and Staff College, Air University curriculum only.

CONTINUING EDUCATION AND NONCREDIT PROGRAMS

The College of General Studies sponsors programs of popular credit and noncredit courses, institutes, and lectures offered both on campus and off campus.

These programs are organized to provide needed auxiliary educational services and are designed to supplement the formal educational offerings of the University.

Noncredit courses in a wide variety of subject fields may be set up at the request of any interested group. There are no entrance requirements. The length of each course is determined by the wishes of the sponsoring group and the nature of the subject to be studied.

Civic clubs, church groups, trade associations, parent-teacher associations, and other organizations which are interested in promoting and organizing informal programs of study, securing assistance in organizing and in developing their own leadership training courses, or receiving specialized advice or assistance are invited to consult Olive Jean McKay, A.M., Ed.D., Staff Assistant (Continuing Education), College of General Studies, Telephone: 965-2350.

Among the courses offered by the College of General Studies, are the following. Unless otherwise specified, all courses are noncredit.

Administrative Development

The techniques of management and instruction. Part of the Administrative Development Program of the Office of the Adjutant General, Department of the Army.

Agency for International Development

The College Preparatory Workshop for Foreign Students, a series of class meetings led by experienced university teachers, introduces the foreign student to the system of higher education in the United States. Students are instructed and given practice in classroom procedures, examination techniques, note taking, report writing, the use of the library, and outside study.

American Speech and Diction

Designed for employees of foreign embassies. Articulation drills, stress and intonation patterns in "standard" American English, discussion of dialect differences, and vocabulary-building exercises. Individually designed exercises and daily tape recordings.

Business Management Institute

An institute on modern management principles and techniques for small business executives. Offered in cooperation with the Small Business Administration to improve skill and ability in solving practical business problems.

Effective Speech Communication

Principles of effective speech communication, including practice in the organization, delivery, and evaluation of presentations commonly encountered in management situations.

Growth of Political Parties in the United States

Chronological treatment of the growth of American political parties. Factors in our political history relevant to the current party struggle and the future course of politics: role of party conventions; importance of party platforms; influence of particular personalities; continuance of certain issues; impact of wars and other disasters; mechanisms for achieving party victory; and, with special attention, the relationship between minor parties and splinter groups and the fundamental two-party nature of our political system. Parties considered socially, ethically, and politically.

Hospital Administration

A credit course of lectures and discussions broadly covering the field of hospital administration designed especially for those working in hospitals at the executive and department-head level and for those employed in federal hospital programs who deal with various phases of hospital programming and operations.

Topics include the history of hospitals, the scope and organization of voluntary and federal hospital programs, the functional elements of hospitals, with emphasis on the application of modern management tools in Hospital Administration.

Institute for Parents

Emphasizes *understanding* in four areas of study: the gifted child, reading problems, modern school methods, and the early adolescent. Primarily to help parents understand their children in relation to themselves as parents, to the school, and to the community.

International Cookery

Lectures and demonstrations on basic dishes of various countries to illustrate different methods of cooking and characteristic seasonings. Tastiness, low cost, high nutritional value, and availability of ingredients are considered in the choice of recipes.

Investment Management

A course in management for those with a basic knowledge of the stock market and investment principles. Topics include the selection of stocks most suitable for specific objectives.

Investments

"How to Invest from $50 to $50,000" is frequently offered in answer to popular demand. Topics include insurance, wills, bank deposits, government bonds, real estate, various types of securities, the New York Stock Exchange, mutual funds, investment advisory services, and the importance of fitting the financial plan to the individual.

Management Communication

Elements of the communication process; problems in communication; basic principles of effective communication, psychological and sociological aspects of communication; and problems of specific communication efforts.

Management for Research, Development, and Testing Laboratories

Designed to train executives in development of over-all managerial skills. Planned to give executives a general familiarity with tasks, problems, techniques, and methods of management; to relate these general principles to functioning of their specialized business activities; and to provide them with a forum for discussing common problems and interchanging views, knowledge, and experience.

Manuscript Clinic: Books for Children

A practical service for writers who are in need of professional literary counsel and detailed constructive criticism by an experienced author, editor, or critic. Completed work or work in progress is accepted in any one of the following categories: (1) a work of fiction, not to exceed 30,000 words; (2) two or three short stories; (3) a biography; (4) a work of nonfiction, not to exceed 20,000 words, or several articles; (5) a translation, not to exceed 10,000 words; (6) a picture-story book, including illustrations; (7) an outline for a longer work, together with several sample chapters.

Writers are instructed in the preparation of manuscripts for submission to a publisher, and advice on marketing is available. After consulting with the coordinator, the consultee meets with an appropriate consultant. Arrangements are made for three subsequent private meetings at a time and place convenient to the persons concerned.

Nursing Education

A credit course in the management of the hospital nursing unit is offered for nurses in the metropolitan Washington area. Emphasis is placed on the relation of the hospital nursing unit to the hospital and community, current concepts and standards in nursing service and their application to unit management, and the development of techniques for the implementation of concepts and policies. Other credit courses in this field are being developed.

Planning for Retirement

A ten-session course used by many large business and industrial firms to help men and women plan for retirement.

Preparation of Summaries

Training in accurate summarizing of classified documents and information in readable form.

Professional Writing (Introductory)

The essentials of writing techniques. Manuscripts submitted for consideration and criticism of the teacher and class. Analysis of magazine writing opportunities for free-lance writers.

Professional Writing (Advanced)

Emphasis on improving quality and techniques to a professional, salable level. An interval of two weeks between classes gives the student a greater opportunity for manuscript preparation. Major emphasis is upon article writing.

Program Planning for Organizations

Designed especially for civic and club workers. Topics include: planning individual programs, public relations, the responsibility of leadership, and exploring projects and activities for a particular group.

Retarded Child

Brief historical overview of social concern for the retarded child. Problems of definition and classification; the matter of institutionalization; hopefulness of research. The course is especially designed to build up a broad understanding from the point of view of the parents.

Stenographic Refresher

Dictation directed toward a review of brief forms, word beginnings, word endings, the 3,000 most frequently used words in the English language, with 80 to 100 word dictation.

Tax Administration

Principles and techniques of the internal administration of a tax agency. The assessment, collection, audit, including excise; property and personal tax. A special course designed for foreign participants under the Agency for International Development.

Executive Seminar: Effective Oral Communication

The techniques for effective communication and presentation with assigned subject material. An evaluation of the interviewing technique, counseling, and group participation. A special program designed for the Supply and Maintenance Command, U. S. Army.

Mathematical and Statistical Topics for Accountants

An introduction to some of the mathematical concepts and techniques relative to the work of the accountant which will include lectures on probability statistics with particular emphasis on sampling techniques as aids to managerial decision making, and linear programming.

Environmental Technology

A series of lectures on "The Dynamic Environment" offered in cooperation with the Institute of Environmental Sciences of the National Academy of Sciences.

Studies in Management

Studies of modern concepts of the management function and the background of modern management theory, the tools of management, human factors in management, direction of programs, and formulation of policies.

Typing Refresher

Diagnostic and remedial practice on electric or manual typewriters.

Written Communication

A review of the principles of clear and effective writing, particularly as it is a concern of governmental correspondence. Ten sessions, classroom demonstration and discussion of textbook assignments; ten sessions, testing and individual conferences.

Writing for Children

A noncredit elementary workshop course is offered for beginning writers during the fall semester. An advanced workshop is offered in the spring semester.

Writers Institute

This six-day conference on fact and fiction for children and youth is a series of roundtable discussions on topics of broad general interest, conducted by experienced authors and editors.

ADMISSION AND REGISTRATION

A simplified system of admission and registration is used in noncredit courses.

Such courses are open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. Classes may be limited in size in order to maintain the standards desired.

FEES

The tuition fees for noncredit courses are determined by the length and nature of the course.

READING CLINIC

The Reading Clinic, Binney Hall, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition, special reading improvement classes are conducted on the high school and adult levels.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted, and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are used for increasing speed of comprehension.

Fees

Individual Diagnosis	$45.00
Individual Reading Instruction	6.00 a lesson
Semi-individual Instruction	5.00 a lesson
Small Groups with common reading difficulties	3.75 a lesson
Students currently enrolled in the University	3.25 a lesson

All fees for diagnostic and corrective work are payable in advance at the Office of the Cashier. Reading Improvement Course fees are payable in full at the time of registration. For further information, consult Miss Mary E. Coleman, A.M., Director, or Miss Joanne B. Parker, A.B., A.M in Ed., Assistant Director, Binney Hall, 2018 Eye Street NW.; FEderal 8-0250, Extension 491 or 598.

OFF-CAMPUS CENTERS

The College of General Studies has offered programs in the Centers listed below.

CENTRAL INTELLIGENCE AGENCY
WASHINGTON 25, D. C.

Training Officer: William C. Rein, Registrar
Building: Headquarters, Room GC-03
Telephone: 351-5513
Field Representative for the University: Michael H. Jessup
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts in International Affairs
Length of Courses: Fifteen weeks
Open only to CIA employees

CIVIL SERVICE COMMISSION, WASHINGTON 25, D. C.
(Member of Federal Triangle Educational Association)*

Training Officers: William H. Rima, Jr., Director of Personnel; John Murtha, Chief of Program Development Section
Building: Main Building, 8th and F Streets NW., Room 223 (Mr. Rima); Room 217 (Mr. Murtha)

* An organization of Federal Agencies situated in the Federal Triangle Area of downtown Washington, D. C.

Telephone: DUdley 6-3484 (Mr. Rima); DUdley 6-6118 (Mr. Murtha)
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Civil Service Commission and to personnel of other government agencies by permission

DEPARTMENT OF COMMERCE

Bureau of the Census, Washington 25, D. C.

Training Officers: James Vawter, Chief, Employee Development Branch, Personnel Division; John Hickey, Training Officer (General Field), Personnel Division
Building FOB 3, Room 1370, Suitland, Maryland
Telephone: 440-1524
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to all employees of the Bureau of the Census and the Naval Hydrographic Office, and to other government employees by permission

Bureau of International Commerce, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Mrs. Jane deLauder, Training Coordinator
Building: Commerce Department Building, Room 7416, 14th Street and Constitution Avenue NW.
Telephone: WOrth 7-2760
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of Commerce and to personnel of other government agencies by permission

Business and Defense Services Administration, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Walter F. Bayen, Employment Development Officer and Training Director
Building: Commerce Department Building, Room 4845, 14th Street and Constitution Avenue NW.
Telephone: WOrth 7-5378

Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of Commerce and to personnel of other government agencies by permission

Coast and Geodetic Survey, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: Mrs. Muriel Christgau, Training Branch, Personnel and Safety Division, and Robert C. Czapiewski, Employee Development Officers
Building: Longfellow Building, Room 214, Connecticut and Rhode Island Avenues NW.
Telephone: DU 2-3271
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Science in Cartography
Length of Courses: Fifteen weeks
Open to all employes of the Bureau of the Census and the Naval Hydrographic Office and to other government employees by permission

National Bureau of Standards, Washington 25, D. C.

Registrar: Mrs. Virginia Maxwell
Building: The Manse, Room 102, Connecticut Avenue and VanNess Street NW.
Telephone: EMerson 2-4040, Extension 366 or 7400
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to all employees of the National Bureau of Standards—also to all employees of other government agencies and to all American citizens, providing they meet the formal prerequisites

Patent Office, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Willis Hokans, Employee Development Officer
Building: Commerce Department Building, Room 3625, 14th Street and Constitution Avenue NW.
Telephone: WOrth 7-2871
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of Commerce and to personnel of other government agencies by permission

Weather Bureau, Washington 25, D. C.

Training Officer: Albert V. Carlin, Chief, Training Section
Building: 4880 MacArthur Blvd., Room G108
Telephone: EXecutive 3-3111, Extension 4194
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Graduate courses in meteorology
Length of Courses: Fifteen weeks
Open to all government employees by permission of the Weather Bureau

DEPARTMENT OF DEFENSE

The Pentagon, Washington 25, D. C.

After-hours Training Program: Marvin J. Powers, Field Representative for the University
Room: Reception center on the Concourse
Telephone: OXford 7-3141 or 965-2350
Education Office U. S. Air Force
Education Director: Mrs. Lois K. Roberts
Room: 5D476
Telephone: OXford 7-7074 or 7-1863
Education Office U. S. Army
Education Director: Stuart R. Westerlund
Room: 3C147
Telephone: OXford 7-8015 or 7-2823
Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts, Associate in Secretarial Administration, Bachelor of Arts, and Bachelor of Business Administration; graduate program leading to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration
Length of Courses: Fifteen weeks in fall and spring semesters; eight weeks in Summer Sessions
Open only to military and civilian personnel of the Department of Defense

National Security Agency, Fort Meade, Maryland

Training Officer: James V. Donnelley
Building: 1W118
Telephone: PArkway 5-5400, Extension 7414
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Business Administration; graduate program leading to the degree of Master of Arts in the field of Personnel Administration
Length of Courses: Fifteen weeks
Open only to NSA employees

Department of the Air Force

Air Force Technical Applications Center, Alexandria, Virginia

Training Officer: Capt. Glen Jackson, USAF
Building, 2525 Telegraph Road, Alexandria, Virginia
Telephone: OXford 5-1312
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to military and civilian employees of the Air Force Technical Applications Center

Air University Center

Maxwell Air Force Base, Montgomery, Alabama

Project Officer: Lt. Col. William G. Beno, USAF
Building: 800, Room 213
Telephone: 265-5621, Extension 74234
Coordinator for the University at Maxwell: John Littleton Boone Atkinson
Building: 823
Telephone: 265-5621, Extensions 86113 and 86194
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Courses Offered:
Air War College—Graduate program leading to the degree of Master of Arts in International Affairs
Air Command and Staff College—Undergraduate programs leading to the degrees of Bachelor of Arts and Bachelor of Business Administration; graduate program leading to the degrees of Master of Science in Business Administration and Master of Science in Public Administration
Length of Courses: Fifteen weeks
Open to students and faculty of the Air War College and the Air Command and Staff College

Langley Air Force Base, Virginia

Educational Consultant: Robert J. Dewey
Building: 167
Telephone: PArk 2-7911, Extension 24120
Field Representative for the University: Andrew P. Rennie
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate courses leading to the degree of Master of Arts in the field of Personnel Management
Length of Course: Eight weeks and fifteen weeks
Open to military and civilian employees of the Air Force and to other government employees, by permission of the Commanding Officer of Langley Air Force Base

Department of the Army

Army Map Service, Washington 25, D. C.

Training Officer: Jerome E. McClain
Building: Erskine Hall, 6500 Brooks Lane NW.
Telephone: 986-2385
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degree of Bachelor of Science in Cartography
Length of Courses: Fifteen weeks
Open to employees of the Army Map Service and other government employees by permission of the Commanding Officer of the Army Map Service

Army Security Agency, Arlington, Virginia

(Classes held: Vint Hill Farms, Warrenton, Virginia)

Education Officer: Lester E. Gross, Jr.
Building: T-300
Telephone: JAckson 5-5800, Extension 772
Field Representative for the University: Michael H. Jessup
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Eight and fifteen weeks
Open to employees of the Army Security Agency

Army War College, Carlisle Barracks, Pennsylvania

Project Officer: Lt. Col. John K. Brier, USA
Building: Root Hall, Room 113
Telephone: CHapel 3-4141, Extension 505
Coordinator for the University at Carlisle Barracks: William L. Tayler
Building: Root Hall, Room 122
Telephone: CHapel 3-4141, Extension 315
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in International Affairs
Length of Courses: Fifteen weeks
Open to students and faculty of the Army War College

Fort Belvoir, Virginia

Educational Adviser: Eric Eber
Building: E-33
Telephone: EDgewater 9-5500, Extension 27154
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, Bachelor of Science in Cartography; graduate program leading to the degree of Master of Science in Business Administration
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Belvoir

Fort Detrick, Frederick, Maryland

Training Officer: Miss Veronica Catlett
Building: Civilian Personnel Office
Telephone: MOnument 3-4111, Extension 5147
Type of Course Offered: Business Management and Biochemistry courses
Length of Courses: Fifteen weeks
Open to civilian employees of Headquarters, Fort Detrick

Fort Eustis, Virginia

Educational Adviser: John Williams
Building: Educational Development Services, Building S-711—Lee Blvd. and 12th Street
Telephone: TRinity 7-1311, Extension 22586 or 21121
Field Representative for the University: Andrew P. Rennie
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in the field of Personnel Administration
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Eustis

Fort McNair, Washington 25, D. C.

(Undergraduate Program)

Educational Adviser: Miss Margaret Lockwood
Building: Post Education Center, Building 20A, Second Floor
Telephone: JAckson 7-9400, Extension 268.
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort McNair

Fort George G. Meade, Maryland

Training Officer: Gustaf E. Berglund
Building: 393, Army Education Center
Telephone: ORchard 4-7141, Extension 6421
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration
Length of Courses: Fifteen weeks
Open to military and civilian employees of the Army and to other government employees by permission of the Commanding Officer of Fort George G. Meade

Fort Monroe, Virginia

Educational Director: Paul Rahenkamp
Building: T-183, Education Center, Fort Monroe
Telephone: 727-2454
Field Representative for the University: Andrew P. Rennie
Telephone: 965–2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts in the field of Personnel Administration
Length of Courses: Undergraduate courses, eight weeks; graduate courses, fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Monroe

Fort Myer, Virginia

Educational Adviser: Miss Margaret Lockwood
Building: Post Education Center, Building 604, South Area
Telephone: JAckson 7-9400, Extension 268
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Myer

Department of the Navy

Main Navy Building, Washington 25, D. C.

Training Officers: Edward Goemaat, Head, Training Branch, DCPD; Miss Kathleen V. Sullivan, Employee Development Officer
Building: Main Navy Building, Room 1111, Constitution Avenue at 18th Street NW.
Telephone: OXford 6-6155

After-hours Training Program: Jack W. Charles, Field Representative for the University

Telephone: 965-2350

Type of Course Offered: Undergraduate courses leading to the degrees of Associate in Arts, Associate in Secretarial Administration, and Bachelor of Arts; graduate program leading to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Department of Defense

Bureau of Naval Personnel, Washington 25, D. C.

Training Officers: CDR Robert M. Collins, USN, Head, Officer Education and Training Branch; DeWitt Fisher, Deputy Head; Paul L. Frantz, Special Programs Coordinator

Building: Arlington Annex, Room 3713

Telephone: OXford 4-2403 or 4-2776.

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Special courses in Human Relations and Management, Public Speaking for Naval Personnel, and Foreign Languages

Length of Courses: Fifteen weeks

Open to military personnel on active duty in the Department of the Navy by quota assigned to the various bureaus and offices, and to civilian employees of the Department by permission

Bureau of Naval Weapons, Washington 25, D. C.

Training Officers: S. P. Dudzik, Head, Employee Training and Development Section; Mrs. Honorah B. Peter, Training Officer

Building: Munitions Building, Room 2122, Constitution Avenue at 20th Street NW.

Telephone: OXford 6-7341

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Special courses in Human Relations and Management

Length of Courses: Fifteen weeks

Open to civilian and military personnel on active duty in the Bureau of Naval Weapons by quota assigned to the various divisions and offices, and to civilian employees of the Department of the Navy by permission

Bureau of Ships, Washington 25, D. C.

Training Officer: Mrs. Edna K. Trudeau, Employee Development Officer

Building: Main Navy Building, Room 1427, Constitution Avenue at 18th Street NW.

Telephone: OXford 6-2927

Field Representative for the University: Jack W. Charles

Telephone: 965-2350

Type of Course Offered: Graduate program leading to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Department of Defense

Bureau of Yards and Docks, Washington 25, D. C.

Training Officers: Robert J. Wilson, Head, Training Branch; Millard F. Billings
Building: Yards and Docks Annex, Room 2B-37, Memorial Drive and H Road, Arlington, Virginia
Telephone: OXford 5-4367
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Courses: Graduate program leading to the degree of Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration
Length of Courses: Fifteen weeks
Open to military and civilian personnel and to other government employees, by permission of the Commanding Officer

David Taylor Model Basin, Carderock, Maryland

Training Officer: William H. Struhs, Jr., Head, Training Branch
Building: 13, Room 202
Telephone: EMpire 5-2600, Extension 394
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Special in-service training courses arranged by the Training Officer
Length of Courses: Fifteen weeks
Open to military personnel and civilian employees of the David Taylor Model Basin and to other government employees, by permission of the Commanding Officer of the installation

Military Sea Transportation Service, Washington 25, D. C.

Training Officers: Maurice V. Foreman, Director, Training Division: John W. Meadows, Assistant to the Director
Building: T-8, Room 1215, 3800 Newark Street NW.
Telephone: OXford 6-9620
After-hours Training Program: Jack W. Charles, Field Representative for the University
Telephone: 965-2350
Type of Course Offered: Graduate and Special Courses in Management
Length of Courses: Fifteen weeks
Open to civilian and military personnel of the Military Sea Transportation Service and to other government employees, by permission of the Commanding Officer of the installation

National Naval Medical Center, Bethesda, Maryland

Information and Education Officer: Lt. Henrietta R. Lanier, USN
Building: 144, Information and Education Office
Telephone: 497-4585
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy, employees of the National Institutes of Health, and to other government employees, by permission of the Commanding Officer of the National Naval Medical Center

Naval Oceanographic Office, Suitland, Maryland

Employee Development Officers: Willis L. Tressler, Director; Edmund J. Klukowski
Building: FOB 3, Room G-121
Telephone: REdwood 6-2700, Extension 248
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, and the Bachelor of Science in Cartography
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy, employees of the Census Bureau, and to other government employees in the Department of Defense, by permission of the Naval Hydrographic Office

Naval Propellant Plant, Indian Head, Maryland

Training Officer: Leland Cook, Director of Education and Community Relations
Building: D-325, Industrial Relations Office
Telephone: Riverside 3-2111, Extension 591
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate and graduate courses
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer of Naval Propellant Plant

Naval Research Laboratory, Washington 25, D. C.

Training Officers: William J. McLaughlin, Mrs. Mary Nethken, Staff Training Section; E. C. Reinhardt, Science Education Section
Building: 43, Rooms 102 and 113, 4555 Overlook Avenue SW.
Telephone: 5741-856 or 5741-858
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate and graduate courses

Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy at the Naval Research Laboratory and other government employees, by permission of the Naval Research Laboratory

Naval Supply Center, Norfolk, Virginia

Training Officers: Harold V. Pelton, Director; Bernard A. La Barge, Industrial Relations Department
Building: W-143
Telephone: MAdison 2-8211, Extension 2144
Field Representative for the University: Andrew P. Rennie
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in the fields of Controllership, Governmental Administration, and Personnel Management
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees, by permission of the Commanding Officer

Naval War College, Newport, Rhode Island

Project Officer: CDR Jack E. Evans, USN
Building: Luce Hall, Room 114
Telephone: VIking 1-3021
Coordinator for the University at Newport: Hiram M. Stout
Building: Pringle Hall, Room 361
Telephone: VIking 7-2629
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in International Affairs
Length of Courses: Fifteen weeks
Open to faculty and students of the Naval War College

Naval Weapons Laboratory, Dahlgren, Virginia

Training Officer: Mac A. Curtis, Head, Employee Development Division
Building: Industrial Relations Building
Telephone: NOrth 32511, Extension 609
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate and graduate courses in Physics
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Department of Defense and others, by permission of the Commanding Officer of the installation

U. S. Marine Corps Schools, Quantico, Virginia

Education Officer: Lt. Barbara J. Roy, USMC
Building: Special Services Building, Education Office, Little Hall
Telephone: Quantico 1000, Extension 26749

Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Eight and fifteen weeks
Open to military personnel and their dependents and civilian personnel attached to the Marine Corps Schools

U. S. Naval Academy, Annapolis, Maryland

Coordinator for the Academy: William W. Jeffries, Senior Professor of English, History, and Government Department
Building: Maury Hall
Telephone: 268-7711, Extension 642
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in Personnel Administration and undergraduate courses
Length of Courses: Eight and fifteen weeks
Open to military and civilian personnel attached to the Academy and other personnel by permission of the Naval Academy

U. S. Naval School of Hospital Administration, Bethesda 14, Maryland

Academic Director: LCDR Willie E. Bean, MSC, USN
Building: 141, Room 131
Telephone: 497-4207
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to military personnel assigned to duty under instruction at the U. S. Naval School of Hospital Administration

U. S. Naval Station, Washington 25, D. C.

Training Officer: Mrs. Marie J. Muir, Supervisory Training Officer
Building: 172, Second Floor, M at 8th Street SE.
Telephone: LIncoln 7-5700, Extension 2160, 2188, or 2416
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts: graduate courses in accounting, administration, and personnel management; special certificate program for supervisors to meet local in-service training needs
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees, by permission of the Superintendent of the Naval Weapons Plant

U. S. Navy Marine Engineering Laboratory, Annapolis, Maryland

Training Officer: Lorick F. Fox
Building: 3-A, Administration Building, Industrial Relations Department
Telephone: COlonial 3-2611, Extension 1210
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate and graduate courses
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer.

Joint Service Schools

Industrial College of the Armed Forces, Fort McNair, Washington 25, D. C.

Project Officer: Col. James Lake, USAF
Building: Industrial College of the Armed Forces, Room D277
Telephone: OXford 5-8322
Coordinator for the University: James C. Dockeray
Building: Hall of Government, Room 201, 710 Twenty-first Street NW.
Telephone: FEderal 8-0250, Extension 512 or 539
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Science in Business Administration
Length of Courses: Fifteen weeks
Open to students and faculty of the Industrial College of the Armed Forces

National War College, Fort McNair, Washington 25, D. C.

Project Officer: Lt. Col. F. H. Marley, USAF
Building: National War College, Room 115
Telephone: OXford 5-8404
Coordinator for the University: C. Edward Galbreath
Field Representative for the University: Marvin J. Powers
Telephone: 965-2350
Type of Course Offered: Graduate program leading to the degree of Master of Arts in International Affairs
Length of Courses: Fifteen weeks
Open to students and faculty of the National War College

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

SOCIAL SECURITY ADMINISTRATION

(Bureau of Old Age and Survivors Insurance)

Baltimore 35, Maryland

Employee Development Officer: William B. Wiley, Chief, Educational Facilities Section
Building: Headquarters, Room 147
Telephone: 944-5000, Extension 2430 or 2429
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Social Security Administration and to personnel of other governmental agencies by permission

DEPARTMENT OF JUSTICE, WASHINGTON 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Daniel Keenan, Departmental Training Officer
Building: Justice Department Building, Room 1226, 10th Street and Pennsylvania Avenue NW.
Telephone: REpublic 7-8200, Extension 3124
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of Justice and to personnel of other government agencies by permission

FEDERAL BUREAU OF INVESTIGATION, WASHINGTON 25, D. C.

Special Agent: William E. Clark, Personnel Office
Building: Justice Department Building, Room 4513, 9th Street and Pennsylvania Avenue NW.
Telephone: EXecutive 3-7100, Extension 402
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to employees of the Federal Bureau of Investigation only

DEPARTMENT OF LABOR, WASHINGTON 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: James C. Stevens, Employee Development Officer; Kenneth Bute, Assistant Training Officer
Building: Labor Department Building, Room 6220, 14th Street and Constitution Avenue NW.
Telephone: 961-2101
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of Labor and to personnel of other government agencies by permission

DEPARTMENT OF STATE, WASHINGTON 25, D. C.

Training Officer: Donald C. Leidel, Acting Chief, Career Development and Counseling Division, Office of Personnel
Building: State Department Building, 23d Street between Virginia Avenue and C Street NW.
Telephone: DUdley 3-4809
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Special courses designed for employees self-development
Length of Courses: Fifteen weeks
Open to employees of the Department of State, I. C. A., and U. S. I. A.

DEPARTMENT OF THE TREASURY, WASHINGTON 25, D. C.

Bureau of Accounts

(Member of Federal Triangle Educational Association)

Training Officers: Miss Joyce Davenport and Ken Eriksson, Employment Development Officers
Building: Treasury Annex Number 1, Room 240, Pennsylvania Avenue and Madison Place NW.
Telephone: WOrth 4-5367
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

Bureau of Customs, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: James J. Doherty, Head, Employee Development Unit; Alfred F. Murphy, Employee Development Officers
Building: 2100 K Street NW.
Telephone: WOrth 4-2548

Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

Bureau of Engraving and Printing, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Mrs. Frances N. Nadeau, Employee Development Officer
Building: Industrial Relations Office, 14th and C Streets NW.
Telephone: WOrth 4-7571

Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

Bureau of Narcotics, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Walter Panich, Administrative Officer
Building: Coast Guard Building, Room 8000B, 1300 E Street NW.
Telephone: WOrth 4-2243

Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350

Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts

Length of Courses: Fifteen weeks

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

Coast Guard, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: Jasper L. Kranke, Supervisory Training Officer; Mrs. Eva Fletcher, Training Instructor
Building: U. S. Coast Guard Building, Room 4211, 1300 E Street NW.
Telephone: WOrth 4-5350
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Coast Guard and to personnel of other government agencies by permission

Internal Revenue Service, Washington 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: D. C. Barry, Chief, National Office Training Branch; Miss Ethel W. Morgan, Miss Ruby Bennett, Employee Development Training Officers
Building: Internal Revenue Service Building, Room 1113, 12th Street and Constitution Avenue NW.
Telephone: WOrth 4-3931 (Mr. Barry and Miss Bennett), WOrth 4-3377 (Miss Morgan)
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

District of Columbia Government, Washington, D. C.

(Member of Federal Triangle Educational Association)

Training Officers: Benjamin Ludwig, Training Officer; C. Howard Larson, Employee Development Assistant
Building: District of Columbia Government Building, Room 209, 499 Pennsylvania Avenue NW.
Telephone: NAtional 8-6000, Extension 2270
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the District of Columbia Government and to personnel of other government agencies by permission

DEPARTMENT OF PUBLIC WELFARE

Children's Center, Laurel, Maryland

Training Officer: Edward H. Rupp, Employee Development Officer
Building: Administration Building
Telephone: NAtional 8-1496
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Special courses in Psychology
Length of Courses: Fifteen weeks
Open to personnel of the Children's Center and to personnel of other District and federal government agencies by permission

District of Columbia General Hospital

Employee Management Relations Specialist: Miss Elizabeth M. McQuaide
Building: Administration Annex, District of Columbia General Hospital, 19th and E Streets SE.
Telephone: LIncoln 7-9200, Extension 569
Field Representative for the University: Michael H. Jessup
Telephone: 965-2350
Type of Course Offered: Undergraduate courses in Psychology
Length of Courses: Fifteen weeks
Open to employees of the District of Columbia General Hospital

FEDERAL AVIATION AGENCY, WASHINGTON 25, D. C.

(Member of Federal Triangle Educational Association)

Training Officer: Miss Beverly McCarthy, Employee Development Officer
Building: T-3, Room 1215, 16th Street and Constitution Avnue NW.
Telephone: WOrth 7-3647
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Federal Aviation Agency and to personnel of other government agencies by permission

FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON 25, D. C

(Member of Federal Triangle Educational Association)

Training Officer: Michael Martiney, Chief, Manpower Development and Utilization Branch
Building: New Post Office Building, Room 1207, 12th Street and Pennsylvania Avenue NW.
Telephone: EXecutive 3-3620, Extension 134

Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Federal Communications Commission and to personnel of other government agencies by permission

FEDERAL RESERVE BOARD, WASHINGTON 25, D. C.

Training Officer: June A. Stetter, Administrative Assistant, Division of Personnel Administration
Building: Federal Reserve Building, 20th Street and Constitution Avenue NW.
Telephone: REpublic 7-1100, Extension 435
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to all government employees and others by permission

INTERSTATE COMMERCE COMMISSION, WASHINGTON 25, D. C.
(Member of Federal Triangle Educational Association)

Training Officer: Dyrck van Duyl, Training Officer
Building: Interstate Commerce Building, Room 1148, 12th Street and Constitution Avenue NW.
Telephone: NAtional 8-7460, Extension 7116
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Interstate Commerce Commission

NATIONAL SCIENCE FOUNDATION, WASHINGTON 25, D. C.

Training Officer: E. Paul Broglio
Building: National Science Foundation Building, 19th Street and Constitution Avenue NW.
Telephone: STerling 3-2140, Extension 389
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Courses leading to the degrees of Associate in Arts and Bachelor of Arts
Length of Courses: Fifteen weeks
Open to all government employees by permission of the National Science Foundation

POST OFFICE DEPARTMENT, WASHINGTON 25, D. C.
(Member of Federal Triangle Educational Association)

Training Officers: F. L. Royer, Mrs. Jeanne Hoag, Employee Development Officers
Building: New Post Office Building, Room 3140, 12th Street and Pennsylvania Avenue NW.
Telephone: WOrth 1-7293
Field Representative for the University: Alexander G. Rose III
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Post Office Department and to personnel of other government agencies by permission

VETERANS ADMINISTRATION, WASHINGTON 25, D. C.

Training Officer: Kermeth Marcuson, Chief, Employee Relations and Training Division
Building: Veterans Administration, Main Building, Room 115, Vermont Avenue and H Street NW.
Telephone: DUdley 9-3101
Field Representative for the University: Jack W. Charles
Telephone: 965-2350
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts and Bachelor of Arts; graduate program leading to the degree of Master of Arts
Length of Courses: Fifteen weeks
Open to employees of the Veterans Administration and to personnel of other government agencies by permission

MELPAR, INCORPORATED
FALLS CHURCH, VIRGINIA

Personnel Representative: Miss Margaret R. Kiley
Building: Central Office Building, Personnel Office, 3000 Arlington Boulevard, Falls Church, Virginia
Telephone: JEfferson 4-6000, Extension 2350
Field Representative for the University: Michael H. Jessup
Telephone: 965-2350
Type of Course Offered: Undergraduate and graduate courses in mathematics
Length of Courses: Fifteen weeks
Open to Melpar employees only

NATIONAL 4-H CLUB FOUNDATION
WASHINGTON 15, D. C.

Director of Program: Glen C. Dildine, Consultant, Human Development-Human Relations Program
National 4-H Center: 7100 Connecticut Avenue NW.
Telephone: OLiver 6-9000

Field Representative for the University: Andrew P. Rennie
Telephone: 965-2350

The College of General Studies, in cooperation with the School of Education, sponsors a workshop in Human Development and Human Relations at the National 4-H Club Center.

The workshops are held during the last week of June and all of July. They are conducted by the National 4-H Club Foundation in behalf of the Cooperative Extension Service. Six semester hours of graduate credit may be earned by participation in the workshop.

Complete information is available from State Extension Training Officers, the 4-H Club Foundation, and the Federal Extension Service.

EDUCATION COURSES FOR TEACHERS

Undergraduate and graduate courses for elementary and secondary school teachers have been given by the College of General Studies in coordination with the School of Education in the school systems in the areas listed below. Teachers interested in having a program in Education started in their communities should make their requests known through their Directors of Instruction to Andrew P. Rennie (Telephone: 965-2350), Field Representative for The George Washington University for Off-Campus courses in Education.

Alexandria Public Schools

John C. Albohm, Superintendent
418 South Washington Street
Alexandria, Virginia — Telephone: KIng 9-9100

Arlington County Public Schools

Joseph B. Johnson, Assistant Superintendent for Instruction
1426 N. Quincy Street
Arlington, Virginia — Telephone: JAckson 2-7700

Berkeley County Public Schools

Jack K. Randolph, Superintendent of Schools
David E. Mudge, Assistant Superintendent
Berkeley County Public Schools
Martinsburg, West Virginia — Telephone: Martinsburg 8978

Calvert County Public Schools

Maurice A. Dunkle, Superintendent of Schools
Prince Frederick, Maryland — Telephone: Prince Frederick 76 and 86

Fairfax County Public Schools

W. Harold Ford, Assistant Superintendent for Instruction
Fairfax County School Board
Fairfax, Virginia — Telephone: CRescent 3-6500

FREDERICK COUNTY PUBLIC SCHOOLS

Fred J. Brown, Jr., Assistant Superintendent for Instruction
115 East Church Street
Frederick, Maryland Telephone: 662-4191

CLARKE COUNTY PUBLIC SCHOOLS

George W. Burton, Superintendent
Clarke County Public Schools
Berryville, Virginia Telephone: Berryville 38

JEFFERSON COUNTY PUBLIC SCHOOLS

T. A. Lowery, Superintendent
Miss Lucille Heflebower, Supervisor of Instruction
Jefferson County Public Schools
Charles Town, West Virginia Telephone: Charles Town 64

LOUDOUN COUNTY PUBLIC SCHOOLS

Caleb J. Gibson, Director of Instruction
Mrs. Ruth D. Schulke, Supervisor, Elementary Education
Loudoun County School Board
Leesburg, Virginia Telephone: SPring 7-2570

MONTGOMERY COUNTY PUBLIC SCHOOLS

Mrs. Helen M. Johnson, Supervisor of In-service Education
Lawrence G. Strickland, Teacher Specialist
Montgomery County School Board, Box 231
Rockville, Maryland Telephone: 762-5000

PRINCE GEORGES COUNTY PUBLIC SCHOOLS

Edward S. Beach, Jr., Director of Curriculum
Prince Georges County School Board
Upper Marlboro, Maryland Telephone: 627-2811

PRINCE WILLIAM COUNTY PUBLIC SCHOOLS

Claude E. DeHaven, Assistant Superintendent for Instruction
Prince William County School Board
Manassas, Virginia Telephone: EMpire 8-2104

ST. MARY'S COUNTY PUBLIC SCHOOLS

Robert S. King, Jr., Superintendent of Schools
Roy Pepper, Supervisor of Instruction
St. Mary's County School Board
Washington Street
Leonardtown, Maryland Telephone: GReenwood 5-9141

WORCESTER COUNTY PUBLIC SCHOOLS

Paul S. Hyde, Superintendent of Schools
Ernest G. Holland, Assistant Supervisor of Pupil Personnel
Worcester County School Board
Market Street
Snow Hill, Maryland

Telephone: Snow Hill 582 and 583

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the College of General Studies required in degree programs. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

Courses of instruction are scheduled by Training Directors of the various groups, organizations, agencies, and installations interested in conducting an Off-Campus program of college courses. These classes are generally offered in the late afternoon or evening, are identical with the daytime and evening sections of corresponding courses on campus, are taught by many of the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular curriculum and obtain a degree.

EXPLANATION OF COURSE NUMBERS

Courses are assigned dual numbers. The first is a serial number assigned by the College of General Studies at the time of registration. The serial number does not appear in this catalogue. The second number is a departmental course number assigned by the department concerned. The serial numbers are used to distinguish one class from another when the same course is offered simultaneously at different places. The departmental numbers indicate the academic level of each course.

The following system of numbering is used:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily

for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors only.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

BOTANY

Chairman: Russell Bradford Stevens, Ph.D., Professor of Botany, Building C, Room 401 (2029 G Street NW.), FEderal 8-0250, Extension 459

BIOLOGY*

1–2 ***Introductory Biology**** **(4–4)**

This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2. Material fee, $10 a semester.

CHEMISTRY

Chairman: Charles Rudolph Naeser, Ph.D., Professor of Chemistry, Samson Hall, Room 201 (2036 H Street NW.), FEderal 8-0250, Extension 261

3–4 ***Fundamentals of Physical Science*** **(4–4)**

A year course: credit is not given for the first half until the second half is completed. Introduction to methods and achievements of physical science; covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester.

11–12 ***General Chemistry*** **(4–4)**

A year course: credit is not given for the first half until the second half is completed. Lecture (2 hours), laboratory (4 hours), recitation (1 hour). An elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester.

* Biology 1–2 *Introductory Biology* (4–4) replaces Botany 1–2 *General Botany* (3–3) and Zoology 1–2 *Introduction to Zoology* (4–4).

21 *Qualitative Inorganic Analysis* (4)
Lecture (2 hours), laboratory (6 hours). Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12, or a placement examination which may be waived at the discretion of the instructor. Laboratory fee, $18.

111–12 *Physical Chemistry Lectures* (3–3)
A year course: credit is not given for the first half until the second half is completed. Introduction to physical chemistry. Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have adequate credit for physical chemistry laboratory. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 22 or former 30, Physics 13 or 15, or (2) Chemistry 21, Mathematics 22 or former 30, Physics 14.

113–14 *Physical Chemistry Laboratory* (2–2)
A year course: credit is not given for the first half until the second half is completed. Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester.

ECONOMICS

Chairman: John William Skinner, Ph.D., Professor of Economics, Monroe Hall, Room 401 (2115 G Street NW.), FEderal 8-0250, Extension 235

1–2 *Principles of Economics (3–3)**
Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2.

121 *Money and Banking* (3)
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.

133 *The Economy of the Soviet Union* (3)
Development and main features of the economic life of the Soviet Union.

141 *Unionism and Collective Bargaining* (3)
The development and characteristics of American unionism and collective bargaining as economic and social institutions, appraisal of economic and social aspects, public policies and controls.

142 *Labor Economics* (3)
Characteristics of the American labor force, operations of labor markets, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs.

165 *Government Control of Economic Activity* (3)
Changing role of government in promoting and regulating economic activity, types and spheres of control.

181–82 *International Economics* (3–3)
First half: survey of the theory of international trade, factor movements, and balance-of-payments adjustment. *Second half:* analysis of modern international economic problems including problems of less developed countries.

* Economics 1–2 is prerequisite to all other courses in Economics.

217–18 *Survey of Economics* (2 or 3–3)
Survey of economic analysis and policy. Not open to graduate students in economics or economic policy.

219 *Managerial Economics* (3)
Analysis of price, production, and inventory policies of business firms.

241 *Unionism, Collective Bargaining, and Labor Economics* (3)
An accelerated introductory course in labor economics primarily for graduate students in Personnel Administration.

244 *Problems in Unionism, Collective Bargaining, and Labor Economics* (3)
Concentrated study of selected economic, social, and legal aspects of labor relations and labor economics.

246 *Foreign Labor Movements* (3)
Labor in the economic, social, and political structures of selected foreign countries. Contrasts and comparisons with the United States.

251–52 *Economic Development* (3–3)
The theories and problems of economic growth with special attention to the underdeveloped countries.

267 *The Soviet Economy* (3)
Development of the Soviet-type economy; organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth.

EDUCATION

Chairman: Blake Smith Root, Ed.D., Professor of Education, Building D, Room 300 (2013 G Street NW.), FEderal 8-0250, Extension 672

108 *Human Development, Learning, and Teaching* (3)
Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged. For the general student as well as the prospective teacher. Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22 or 121.

112 *Educational Measurement* (3)
Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123.

113 *Elementary School Art* (3)
Lecture and laboratory (3 hours), field work—as arranged. For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Material fee, $4.50.

114 *Elementary School Music* (3)
Lecture (2 hours), field work (2 hours)—as arranged. For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22.

115 *Teaching of Reading in the Elementary School* (3)
Lecture (2 hours), field work (2 hours)—as arranged. A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123 or teaching experience.

116 *Elementary School Social Studies* (3)
Lecture (2 hours), field work (2 hours)—as arranged. For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience.

117 *Elementary School Science* (3)
Lecture (2 hours), field work (2 hours)—as arranged. For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience.

118 *Teaching Science in the Elementary School* (3)
Designed to meet the needs of elementary teachers who wish to improve their science background and become more skillful in the method of teaching; content based on needs of group; nontechnical with respect to science content, practical in method aspect; simple experiments, observations, use of printed materials, field trips, observation of teaching; a how-to-do course for teachers who have little science knowledge and feel insecure in their science teaching. Prerequisite: Education 108 and 123 or teaching experience.

120 *Elementary School Arithmetic* (3)
Lecture (2 hours), field work (2 hours)—as arranged. For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123 or teaching experience.

123 *Society and the School* (3)
Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged. For the general student as well as the prospective teacher. Historical and sociological development of education at local, national, and international levels; cooperation of the school with other community agencies; organization and operation of schools; functions of school personnel.

128 *Children's Literature* (3)
Lecture (2 hours), field work (2 hours)—as arranged. For teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 22.

138 *Teaching Social Studies* (2 to 4)
Lecture (2 hours), field work (2 hours)—as arranged. Prerequisite*: twenty-four semester hours of social studies.

146 *Teaching Foreign Languages* (2 to 4)
Prerequisite*: eighteen semester hours of one foreign language.

147 *Foreign Language Instruction in the Elementary School* (2)
Methods, materials, and activities essential in teaching foreign languages in the elementary school.

161 *Management of the Hospital Nursing Unit* (3)
Analysis of nursing today, the hospital, structure and changing functions, basic concepts of management, personnel practices and activities, interpersonal relationships, legal aspects and safety factors, economics—inventories, and evaluation procedures of the hospital nursing unit.

205–6 *The Curriculum* (3–3)
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems.

207 *Curriculum Materials* (3)
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations.

* This is a special methods course. Prerequisite to all special methods courses: Education 108, 123, and 131, or adequate teaching experience. Additional prerequisites are stated under each course.

208 *A Workshop in Human Development* (6)
A workshop for agricultural extension staff members designed to apply the principles of the behavioral sciences to their work.

209 *Child Growth and Development* (3)
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school.

210 *Adolescent Growth and Development* (3)
A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships.

211 *Evaluation in Education* (3)
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation.

212 *Educational Measurements* (3)
Basic measurement technique; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments.

213–14 *History of Education* (3–3)
First half: the European backgrounds of American education. *Second half:* the evolution of the American school system.

215 *Education of Exceptional Children* (3)
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance.

216 *Education of Slow-learning Children* (3)
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties.

217–18 *Philosophy of Education* (3–3)
First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.

221 *Early Childhood Education* (3)
For experienced teachers. Emphasis on methods, materials, and learning experiences designed to meet the developmental needs of kindergarten and primary-grade children.

223–24 *Reading Problems* (3–3)
For experienced teachers. Study of reading difficulties on elementary and secondary school levels; classroom and clinical procedures in solving reading problems.

227 *Basic Issues in Elementary Education* (3)
A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices.

228 *Instructional Areas in Elementary Education* (3)
Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education.

229 *Administration of Elementary Education* (3)
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

231 *Secondary School Classroom Procedures** (3)
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature.

233 *Audio-visual Education** (3)
Lecture (2 hours), laboratory (1 hour). Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7.

241 *Education of the Gifted** (3)
For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects.

243 *Human Relations in the Classroom** (3)
Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

245 *School and Community** (3)
The school as an important member of a team of social agencies that builds the community.

251 *Guidance in Elementary and Secondary Schools** (3)
A survey course: scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

252 *Organization and Administration of Guidance Services* (3)
Designed for guidance directors and supervisors and experienced school counselors who hope to qualify for such positions in the near future. Prerequisite: a minimum of 15 semester hours of approved graduate work in Measurement and Guidance.

253 *Analysis of the Individual for Purposes of Counseling* (3)
A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: Education 112 or the equivalent.

254 *The Junior High School** (3)
Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities.

257 *Occupational and Educational Information* (3)
Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

258 *Techniques of Counseling* (3)
An intensive study of the educational and psychological processes involved in counseling interviews. Specific types of vocational, educational, and personal counseling problems will be discussed. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258.

263–64 *Employee Training* (3–3)
First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training.

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* Prerequisite: adequate professional preparation.

265–66 *Teaching Secondary School English—Materials, Resources, Content* (3–3)
A refresher course for teachers of English. Discussion of new approaches to high school content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature.

271 *The Teacher and School Administration** (3)
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

272 *The Teacher and School Supervision** (3)
Nature, organization, human relationships, and techniques.

275 *School Finance** (3)
Educational financial theory, practice, and control, including methods of financing.

276 *Seminar: Public Relations in School Administration** (3)
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

278 *School Law** (3)
Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

282 *Use of Community Resources* (3)
A course for teachers on all levels, with emphasis on learning to use community resources to strengthen their programs of learning and teaching. The Smithsonian Institution will receive special attention as one of the examples of a valuable community resource.

285 *Extra-classroom Activities** (3)
Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation.

ENGINEERING AND APPLIED SCIENCE

For information consult Martin Alexander Mason, B.S. in Eng., Ing.-Dr., Professor of Engineering and Applied Science, Tompkins Hall, Room 103 (725 Twenty-third Street NW.), FEderal 8-0250, Extension 246

APPLIED SCIENCE

3 *Graphical Communication* (3)
Principles and methods of graphical communication, sketching, schematic diagrams, nomographs, charts and graphs, elements of descriptive geometry, spatial representation.

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* Prerequisite: adequate professional preparation.

ENGLISH *

Chairman: John Palmer Reesing, Jr., Ph.D., Professor of English Literature, Building D, Room 403 (2013 G Street NW.), FEderal 8-0250, Extension 276

ENGLISH COMPOSITION

Basic English (0)
Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1. No academic credit. Tuition fee. $48.

1 *English Composition* (3)
Review of grammar, exercises in composition, readings.

2 *English Composition* (3)
Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: English 1 or 1X.

11 *The Writing of Reports* (3)
Theory and practice in the writing of technical reports. Prerequisite: English 1 or 1X and 2.

WORLD LITERATURE

41–42 *Introduction to World Literature* (3–3)
First half: a survey of Western literary heritage from Homer to Milton. *Second half:* a review of Western literature from the English metaphysical poets to Franklin Delano Roosevelt.

ENGLISH LITERATURE

51–52 *Introduction to English Literature* (3–3)
A historical survey. Prerequisite: English 1 or 1X.

91–92 *Introduction to European Literature* (3–3)
Consideration of various types. Prerequisite: English 1 or 1X.

135–36 *Shakespeare* (3–3)

AMERICAN LITERATURE

71–72 *Introduction to American Literature* (3–3)
A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1 or 1X.

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to *Basic English*. In lieu of *Basic English*, Off-Campus students may, if they desire, be given permission to register for English 1X on campus. English 1 or 1X is prerequisite to all other courses in English.

143 *The Development Narrative in Literature* (3)
A study of those works in world literature dealing with the development of the child.

144 *American Literature Since 1920* (3)
Poetry, drama, and the novel. Readings and discussion.

GEOGRAPHY AND REGIONAL SCIENCE

Chairman: Robert Dale Campbell, Ph.D., Professor of Geography, Building I, Room 202 (2135 G Street NW.), FEderal 8-0250, Extension 287 and 298

51 *Introduction to Geography* (3)
A study of place attributes and characteristics, patterns and associations of physical and cultural earth features.

52 *World Regions* (3)
The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man.

113 *Geomorphology** (3)
Nature and evolution of earth forms, with special emphasis upon relief features of North America. Prerequisite: Geography 51.

114 *Weather and Climate** (3)
Rudimentary atmospheric physics, air mass and frontal weather analysis, regional climatology. Prerequisite: Geography 51.

115–16 *Physical Geography* (3–3)
Introduction to the earth sciences: form of the earth, grids and time, weather and climate, geomorphic processes and land-forms, soils, vegetation, weather forecasting, map reading.

124 *Land Capabilities* (3)
Evaluation of land capabilities based on analysis of locational, physical, economic and social land characteristics. Principles of site analysis and best use. Systems of measurement of area potential.

125 *Transportation Complexes* (3)
A study of transportation networks and systems by which people, things, and ideas are given varying degrees of place utility. An analysis of the role of transportation in urban, national, and international relationships.

126 *World Economies* (3)
Description and comparison of differing regional economies—pastoral, agricultural, industrial; patterns of world distribution.

146 *World Political Geography* (3)
Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration.

* This course is offered off campus only.

164 *Communist China** (3)
(Formerly Geography 194)

165 *Eastern and Southeastern Asia** (3)
(Formerly Geography 195)

166 *The Soviet Union** (3)
(Formerly Geography 196)

CARTOGRAPHY

1 *Map Interpretation* (3)
Characteristics and uses of different kinds of maps and charts: geographic and grid coordinates, attributes of projections, symbolization.

11 *Cartographic Drafting and Descriptive Geometry* (3)
Special visualization, engineering drawing, schematic diagrams, and descriptive geometry; use of drafting and scribing instruments and materials; exercises in cartographic design and symbolization in the drafting of topographic and special-purpose maps.

12 *Topographic Surveying* (3)
Principles, methods, and instruments used in making space measurements, including layouts, elements of simple curves, coordinate system; and treatment of observational errors. Prerequisite: Mathematics 12; Cartography 11. Surveying fee, $13.

13 *Higher Surveying* (3)
Elements of geodesy, triangulation, topography, hydrography, and precise trigonometric leveling. Prerequisite: Cartography 12. Surveying fee, $13.

17-18 *Elementary Photogrammetry* (3–3)
Principles, methods, and instruments used in photographic surveying and production of maps, photographic interpretation, principles of stereoscopy. Prerequisite: Cartography 13.

110 *Map Projections* (2)
Characteristics, mathematical development, and practical construction of major map projections and grid systems. Prerequisite: Mathematics 22; Cartography 13.

111 *Map Reproduction* (1)
Theory of photographic process, photographic optics, emulsions, developers, lenses, offset lithographic process, line and half-tone reproduction, single and multi-color photolithographic reproduction. Prerequisite: Chemistry 11–12.

155 *Elementary Geodesy* (3)
Development of principles and formulas basic to theoretical and applied geodesy, with application to representative problems. Prerequisite: Mathematics 24.

156 *Geodetic Astronomy* (3)
Development and application of principles and formulas for the astronomic determination of latitude, longitude, and azimuth. Prerequisite: Cartography 155.

160 *Theory of Errors and Geodetic Adjustments* (3)
Separation of random and systematic errors, distribution of errors, Gaussian and Poisson distribution, fundamentals of matrix algebra with special emphasis on least squares adjustment of geodetic networks. Prerequisite: Cartography 155.

191–92 *Map and Chart Construction* (3–3)
Theory and practice in the various phases of map and chart construction; practice in the preparation of original maps and charts for reproduction. Prerequisite: Cartography 156.

* Regional survey.

OCEANOGRAPHY

101–2 *Introductory Oceanography* (3–3)
An introduction to oceanography: general characteristics of ocean basins, properties of sea water, thermal structure, waves, currents, submarine geology, tides, plant and fish ecology, new developments in oceanography based on a review of the current literature. **Prerequisites:** Chemistry 11–12; and Physics 11, 14, 15.

GEOLOGY

Chairman: Geza Teleki, Ph.D., Professor of Geology, Building C, Room 5 (2029 G Street NW.), FEderal 8-0250, Extension 517

3 *Introductory Geology* (3)
A survey course covering the principles of geology. (A nonlaboratory course for Off-Campus students only.)

4 *Introductory Geology* (3)
Geological periods, evolution of life on earth. (A nonlaboratory course for Off-Campus students only.)

103–4 *Geology for Engineers* (3–3)
Prerequisite: 6 hours of Mathematics or Survey of Science or permission of instructor.

105–6 *Fundamentals of Geophysics* (3–3)
Survey of the theories and methods of investigation used in determining the constitution and dynamics of the earth, its oceans, and atmosphere. (It is recommended that students take Geology 3, 4: *Introductory Geology*, or the equivalent.) Prerequisite: Geography 113.

GERMANIC LANGUAGES AND LITERATURES

Chairman: Wolfram Karl Legner, Ph.D., Professor of German, Monroe Hall, Room 405 (2115 G Street NW.), FEderal 8-0250, Extension 282

1–2 *First-year German* (3–3)
A year course: credit is not given for the first half until the second half is completed. The essentials of German grammar; translation of easy prose.

3–4 *Second-year German* (3–3)
A year course: credit is not given for the first half until the second half is completed. Selections from modern German prose; continuation and review of grammar. Prerequisite: German 1–2 or two years of high school German.

9–10 *German Conversation and Composition* (3–3)
Aural training and oral practice.

GOVERNMENT AND BUSINESS

Chairman: James Carlton Dockeray, Ph.D., Professor of Finance, Hall of Government, Room 201 (710 Twenty-first Street NW.), FEderal 8-0250, Extensions 512, 539

ACCOUNTING

Program Coordinator: John Coughlan, B. Comm., Ph.D., Associate Professor of Accounting, Hall of Government, Room 100 (710 Twenty-first Street NW.), FEderal 8-0250, Extensions 243, 610

1–2 *Introductory Accounting* (3–3)
First half: basic principles underlying accounting records, preparation of the work sheet and financial statements, accounting for single proprietorships and partnerships. *Second half:* accounting for corporations and introduction to cost accounting, analysis of financial statements, and valuation and amortization problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor.

3 *General Accounting* (3)
Study of accounting systems and accounting for single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data.

101 *Cost Accounting* (3)
Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data. Prerequisite: Accounting 1–2.

111 *Financial Statement Analysis* (3)
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor.

115 *Survey of Accounting* (3)
Accounting for single proprietorships and corporations with emphasis on the use of accounting information in the management process; study of theory, terminology, and the analysis and interpretation of accounting data. Not open for credit to Accounting or Business Administration majors.

121–22 *Intermediate Accounting* (3–3)
First half: valuation and amortization problems of current assets, long-term investments, tangible fixed assets, intangible assets, and deferred charges; accounting for current, noncurrent, contingent, and estimated liabilities. Prerequisite to 121: Accounting 2 or permission of the instructor. *Second half:* accounting for the organization, financing, operation, and dissolution of corporations and partnerships; basic principles of consignment and installment sales. Prerequisite to 122: Accounting 121 or permission of the instructor.

144 *Federal Accounting* (3)
Accounting procedures in the Federal Government, with emphasis on agency level accounts, implementation of accrued expenditure legislation, and accounting support for cost-based budgets. Accounts of the United States Treasury; current concepts of allotment, obligation, and disbursement accounting and reporting. Prerequisite: Accounting 141 or permission of the instructor.

161 *Income Tax Accounting* (3)
Problems involved in the federal income taxation of individuals and corporations, differences between tax accounting and financial accounting, social security taxes. Prerequisite: Accounting 1–2.

171 *Auditing* (3)
Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22.

181 *Accounting Systems* (3)
Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–22, and 171, or permission of the instructor.

191 *Advanced Accounting* (3)
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22.

193 *Business Budgeting* (3)
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2.

211–12 *Managerial Accounting* (3–3)
First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and amortization problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2 or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor.

215 *Survey of Managerial Accounting* (2 or 3)
Nature, preparation, analysis, and interpretation of accounting reports; study of cost accounting, business budgeting, and internal accounting controls with emphasis on their use in the management process. Prerequisite: Accounting 1–2, 3, or 115, or permission of the instructor.

293 *Budget Preparation and Administration* (3)
Principles of and research on the formulation, adoption, and execution of a system of budgetary control to aid in the management of commercial or industrial business.

BUSINESS AND PUBLIC ADMINISTRATION

201 *Advanced Administrative Management* (2 or 3)
(Formerly Business Administration 201 and Public Administration 210)
An advanced course in administration emphasizing principles and practices common to administrative units of all kinds.

204 *Quantitative Factors in Administration* (3)
Developments in quantitative methods of administration.

205 *Seminar in Communication and Executive Action* (3)
(Formerly Public Administration 242)
Seminar in the communications processes. Research and analysis, identification of factors relating to receptivity; the dynamics of communication.

206 *Personnel Management* (3)
(Formerly Public Administration 231)
Basic principles; structure and organization of personnel offices; responsibilities; interagency relationships; personnel staffing, training, and work measurement.

207–8 *Human Relations in Administration* (2 or 3–3)
(Formerly Business Administration 275–76 and Public Administration 241)
Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications will be emphasized.

262 *Contemporary Administrative Theory and Practice* (3)
(Formerly Public Administration 262)
Current theories and trends in management with particular attention to the behavioral sciences communications and applicability of research.

268 *Management Engineering* (3)
(Formerly Business Administration 268 and Public Administration 216)
Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys including the study of work measurements, work simplification management audits, and other management improvement programs.

280-81-82 *Managerial Aspects of National Security** (3 or 4–3 or 4–3)
The application of business management principles to the military aspects of national security; organization and administration of the Federal Government for national defense; management of national resources (natural, human, energy, economic); budgeting and controllership; determination of requirements; procurement; production; supply management; and communications.

287 *Relation of Government to Business* (3)
(Formerly Business Administration 278 and 287)
Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy.

295 *Research Methods* (3)
Research techniques, sources of information, array and analysis of data, interpretation and presentation of the findings.

BUSINESS ADMINISTRATION

101 *Introduction to Business* (3)
(Formerly Business Organization and Combination)
The business environment; its effects upon the decision making process.

102 *Fundamentals of Management* (3)
Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking.

103 *Institutional Management* (3)
Philosophy of hospital administration: special services, food service, maintenance, internal review.

105 *Personnel Management* (3)
Industrial personnel and manpower programs, organizations and policy in personnel activities.

106 *Problems in Personnel Management* (3)
Principles of manpower management illustrated by cases drawn from business, industry, and government. Prerequisite: Business Administration 105.

107 *Labor Management Contracts* (3)
Management's role in the negotiation and administration of collective bargaining agreements, as essential to development of good labor management relations.

109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.

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* Available only to students in the Master of Science in Business Administration program at the Industrial College of the Armed Forces and the Air University.

111–12 *Personnel Records Administration* (3–3)
First half: basic principles, techniques, and methods used in collecting, processing, evaluating, and storing personnel records of all kinds. *Second half:* problems and cases in special kinds of records keeping and records administration.

113 *Real Estate* (3)
Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation.

121 *Risk Management* (3)
A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual.

122 *Life Insurance and Estate Planning* (3)
Life insurance contracts, their use in providing protection and estate development.

131 *Business Finance* (3)
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2.

138 *Investments* (3)
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2, Business Administration 131.

141 *Basic Marketing* (3)
An introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1–2.

150 *Procurement and Materials Management* (3)
Purchasing organization, procedures, and policies; market relationships; selection of merchandise and sources of supply; procurement information and records; evaluation of procurement practices in industry and government.

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3)

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3)

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3)

171 *Principles of Transportation* (3)
Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of domestic intercity transportation.

193 *Management Communication* (3)
A survey course in the problems of communication; written communication: style and format; oral communication: oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects.

198 *Case Problems in Management* (3)
Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141.

199–200 *Research* (3–3)

209 *Seminar in Personnel Management* (3)
Discussion of industrial personnel and manpower management, and research in advanced problems.

210 *The Personnel Manager* (3)
The job of the personnel manager and his place in the organization; relations of the personnel manager to other executives; the personnel manager's policy role, and his relations with the chief executive. Key problems of the senior personnel executive.

218 *Survey of Data Processing* (3)
A survey of modern data processing systems with emphasis on the management problems associated with the installation and use of such systems.

219 *Digital Computer Programming Concepts* (3)
Machine functions and programmed control, instructions and programs, sub-routines, general purpose programming, business oriented programming language. Prerequisite: Business and Public Administration 204 or permission of instructor.

220 *Comparative Digital Computer Systems* (3)
Properties and capacities of the range of equipments in use today, special purpose business equipments, recent and prospective equipment developments. Prerequisite: Business Administration 219.

221 *Application of Digital Computers* (3)
The integration of data processing in the regular operations of the business or government organization and in establishing flows of management information, systems planning, the impact of Automatic Data Processing on management organization and decision making. Prerequisite: Business and Public Administration 204 and Business Administration 220.

227 *Linear Programming* (3)
Introduction to the vocabulary and methodology of management science through the study of linear programming techniques. Case studies.

228 *Introduction to Operations Research for Management* (3)
Operations research as an approach to the solution of management problems. Emphasis is on the relevance and limitations of operations research. Practical applications are examined.

235 *Financial Management* (2 or 3)

237 *Investment Analysis* (3)
An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138.

241 *Advanced Marketing Management* (2 or 3)
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Marketing research and other tools useful in decision making. Case analysis.

250 *Contract Administration* (3)
The management of government contracts with private suppliers.

251 *Retail Management* (3)
Managerial problems and policies concerning financing, location, organization structure, merchandise policies, advertising and sales promotion, personnel management, operating and service policies, accounting and control, and other related retail management problems. Case analysis.

261 *Seminar in Advanced Management* (3)
Principles of organization. Analysis of organization problems involving the relation of government bureaus and offices with military services, the Congress, the public, other government departments, and with industrial concerns. Review and analysis of business administration and management. Intensive training in conference techniques and the oral presentation of points of view.

263 *Business Organization and Management* (3)
Principles and techniques of administration and management. Analysis of methods of forecasting, planning, organizing, assembling personnel and resources. Historical development of management as a background for present day methods.

286 *Management in the Armed Forces* (3)
Special problems of military organization and management; applicability of business management techniques to the armed forces.

288 *Executive Leadership* (3)
Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations.

291 *Seminar in Business Management* (3)
Research on various phases of management as practiced in American industry.

293–94 *Business Research* (3–3)

296 *Seminar in Controllership* (3)
Research on advanced problems of the controller in all types of business organization and the Federal Government.

297 *Case Studies in Business Administration* (2 or 3)
Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc.

299–300 *Thesis* (3–3)

HEALTH CARE ADMINISTRATION

221 *Survey of Medical Care Organization* (3)
A survey course for students in other fields who wish an over-all knowledge of hospital, nursing home, and other organizations for medical care. (Not open to majors in Hospital Administration.)

222 *Survey of Medical Care Management Procedures* (3)
A survey course for students in other fields who wish an over-all knowledge of management procedures in hospitals, nursing homes, and similar organizations. (Not open to majors in Hospital Administration.)

PUBLIC ADMINISTRATION

199–200 *Research* (3–3)

211 *Problems of Governmental Organizations* (3)
Analysis of the application of organizational theories and practices to government agencies, with particular emphasis on internal organization and control. Special problem areas are examined, such as decentralization, staff-line and field-headquarters relationships, and the role of committees.

213 *Administration in Government* (2 or 3)
A critical analysis of federal administrative organizations, their achievements and pathologies. The roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process are studied with special attention to centripetal and centrifugal forces at work.

221–22 *Staff Functions in Government* (3–3)
Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, security, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services.

232 *Federal Personnel Procedures* (3)
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration.

233 *Seminar in Manpower Development and Utilization* (3)
Research projects and case studies in ways and means of increasing employee potential, use of training programs, executive development, incentive systems.

251 *Governmental Budgeting* (2 or 3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration.

252 *Seminar in Planning and Programming* (2 or 3)
The administrative processes of planning and programming in government, relationship to budgeting, planning and programming as a basis of managerial control, evaluation of accomplishments. This course is primarily for students who have completed Public Administration 251.

260 *Seminar in Policy Formulation and Administration* (3)
Development of agency goals and objectives and administration of agency policies; influence of individuals upon them; factors involving informal organization and role of executive in furthering administrative policy.

261 *Public Opinion and the Administrator* (3)
Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs; evaluating public relations programs; the importance of timing; use of public opinion measurement techniques.

272 *Seminar in Public Personnel Administration* (3)
The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration.

298 *Case Studies in Public Administration* (2 or 3)
(Formerly Public Administration 212)
Analysis and discussion of problems in public management by use of the case method.

299–300 *Thesis* (3–3)

*HISTORY**

Chairman: Roderic Hollett Davison, Ph.D., Professor of European History, Hall of Government, Room 417 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 232.

39–40 *The Development of European Civilization* (3–3)
Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present.

71–72 *The Development of the Civilization of the United States* (3–3)
Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present.

145–46 *History of Russia* (3–3)
An 1100-year survey of the rise and revolution of Russia. *First half:* Russia under the Old Regime, 860–1881. *Second half:* Revolution and Soviet rule, 1881–1960.

* History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 170 through 184; either History 39–40 or 71–72, to courses 161 through 166.

149–50 *European Diplomatic History* (3–3)
Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878.

164 *South America since Independence* (3)
Development of the independent South American states in the 19th and 20th centuries.

166 *Mexico and the Caribbean since Independence* (3)
A survey of the republics of Mexico, Central America, and the Caribbean islands.

171–72 *Social History of the United States* (3–3)
Daily life, institutions, intellectual and artistic achievements of the Agrarian Era 1607–1861; and the Urban-Industrial Era, 1861 to the present time.

181–82 *Diplomatic History of the United States* (3–3)
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898.

183 *Oversea Expansion of the United States* (3)
The political, economic, social, and cultural life of our outlying possessions.

245–46 *Seminar in Eurasian History* (3–3)

281–82 *Seminar in the Diplomatic History of the United States* (3–3)

HOME ECONOMICS

Chairman: Kathryn Towne, A.M., Professor of Home Economics, Building B, Room 23 (2024 G Street NW.), FEderal 8-0250, Extension 363

173 *Home Furnishings* (3)
A course for teachers in house furnishings as part of the environment of modern home life; the role of beautiful homes in the development of ideals and value scales; the choice of materials in the light of family means.

199 *Seminar in Current Problems in Home Economics and Related Subjects and Their Interpretation for Classroom Teaching* (3)

INTERNATIONAL AFFAIRS

Acting Chairman: Archibald Mulford Woodruff, Ph.D., Professor of Urban Studies, Hall of Government, Room 204 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 607 or 661

Economics 251, *Economic Development* (3)

History 246, *Seminar in Eurasian History* (3)

Political Science 99–100, *Research* (3–3)

Political Science 172, *International Organization: the United Nations* (3)

Political Science 212, *Seminar: Comparative Government and Politics* (3)

Political Science 260, *Fundamentals of National Power** (3)

Political Science 261, *International and United States Foreign Policy** (3)

Political Science 262, *National Security Policy of the United States** (3)

Political Science 283, *Topics in International Law* (3)

Political Science 285, *Diplomacy Since World War II* (3)

Political Science 297, *Readings in International Affairs* (1 to 2)

Political Science 299–300, *Thesis* (3–3)

Sociology and Anthropology 263, *Culture, Contact, and Change* (3)

JOURNALISM

Chairman: Ross Pelton Schlabach, Jr., M.S., Professor of Journalism, Library, Room 406 (2023 G Street NW.), FEderal 8-0250, Extension 498

141 *General Editing for Publication* (3)
Editing procedures and techniques, proof reading, titles, arrangement, layout, type uses. Intended for students preparing for trade publications and public relations work rather than newspaper work.

145 *Principles and Problems of Public Relations* (3)
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs.

MATHEMATICS†

Chairman: Nels David Nelson, Ph.D., Professor of Mathematics, Monroe Hall, Room 422 (2115 G Street NW.), FEderal 8-0250, Extension 388

3 *College Algebra* (3)
Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry.

6 *Plane Trigonometry* (3)
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor).

* War Colleges' curricula only.

† No courses numbered 1 to 100 are available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

Graduate credit may not be given for courses numbered 101 to 200 without the permission of the Chairman of the department.

15 *Finite Mathematics I* (3)
Truth value connectives and switching circuits, partitions and counting, probability theory. Prerequisite: two years of high school mathematics.

16 *Finite Mathematics II* (3)
Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15.

21 *Calculus I* (3)
Elementary concepts of analytic geometry. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or the equivalent.

22 *Calculus II* (3)
Differentiation and integration of transcendental functions and applications; conics; parametric equations; techniques of integration. Prerequisite: Mathematics 21.

23 *Calculus III* (3)
Vector concepts; improper integrals; solid geometry; partial differentiation and applications. Prerequisite: Mathematics 22.

24 *Calculus IV** (3)
Multiple integration with application; infinite series; differential equations. Prerequisite: Mathematics 23.

110 *Mathematics for Meteorologists* (3)

111 *Mathematics for Engineers and Physicists I* (3)
Differential equations, vector analysis, introduction to matrix algebra.

112 *Mathematics for Engineers and Physicists II* (3)
Topics from advanced calculus, partial differential equations, and complex variables. Prerequisite: Mathematics 111 or former 132.

122 *Introduction to Abstract Algebra* (3)

124 *Introduction to Matrix Theory* (3)
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices.

130 *Introduction to Finite Differences* (3)
Finite integration and applications, interpolation (approximate integration), and difference equations including Seliwanoff's treatment of the homogenous equation.

133 *Introduction to Numerical Analysis* (3)
Digital computers, accuracy, interpolation, quadrature, numerical solution of equations including differential equations. Prerequisite: Mathematics 111 or former 132.

139 *Advanced Calculus I* (3)
Limits, continuity, real number system, mean value theorems, partial differentiation, implicit function theorems, transformations, and mappings.

171 *Vector Analysis* (3)

172 *Tensor Analysis* (3)
Review of vectors and matrices, transformation groups, curvilinear coordinates, covariant and contravariant tensors, derivatives and integrability conditions. Prerequisite: Mathematics 171.

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* Mathematics 24 (or former 31) is prerequisite to courses numbered 101 to 200.

PHILOSOPHY

Chairman: Charles Edward Gauss, Ph.D., Elton Professor of Philosophy, Building N, Room 30 (718 Twenty-first Street NW.), FEderal 8-0250, Extension 538

51–52 ***Introduction to Philosophy*** (3–3)
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This course is not merely intended as an introduction to those courses in philosophy which follow but is a unit complete in itself for those students in other departments interested in the problems of philosophy relevant to modern thought.

121–22 ***Logic and Scientific Method*** (3–3)
First half: the elementary principles of valid reasoning with emphasis on developing skill in using these principles, introductory consideration of symbolic logic, the nature of a formal system. *Second half:* general analysis of the methods of investigation and reasoning used in the natural and social sciences, procedures and requirements of definition, classification and sorting, analogical and inductive inference, causal determination, the nature and function of hypothesis, measurement, principles of the theory of probability.

PHYSICAL EDUCATION

Acting Chairman for women: Jeanne Ellen Snodgrass, A.B., M.S. in P.E., Assistant Professor of Physical Education for Women, Building H, Room 20 (716 Twentieth Street NW.), FEderal 8-0250, Extension 341
Chairman for men: Joseph Henry Krupa, M.S., Ed.D., Professor of Physical Education for Men, Building S, Room 11 (2025 H Street NW.), FEderal 8-0250, Extension 301

101 ***Physical Education in the Elementary School*** (3)
Physical growth and development of the child and adolescent. Survey of age characteristics and organizations of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

PHYSICS

Chairman: Herman Hedberg Hobbs, Ph.D., Associate Professor of Physics, Samson Hall, Room 201 (2036 H Street NW.), FEderal 8-0250, Extension 361, 286

11 ***Introductory Physics*** (3)
An introduction to the phenomena of light, heat, force, energy; introduction to vectors; and the properties of matter. Prerequisite: high school algebra and plane geometry. Material fee $11.

12 ***Introductory Physics*** (3)
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Material fee, $11.

13 *Introductory Physics* (3)
Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Elementary electricity and magnetism. Prerequisite: Physics 11. Material fee, $11.

14 *General Physics* (3)
Laboratory (2½ hours). Mechanics, wave-motion, and sound. Prerequisite: Physics 11. Prerequisite or concurrent registration: Mathematics 21 (or former 29). Material fee, $11.

15 *General Physics* (3)
Laboratory (2½ hours). Electricity and magnetism. Prerequisite: Physics 14, Mathematics 22 (or former 30). Material fee, $11.

16 *General Physics* (3)
Modern physics, molecular structure of matter, structure of the atom. Prerequisite: Physics 13 or 15, Mathematics 22 (or former 30) and consent of the instructor.

102 *Heat and Thermodynamics* (3)
Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 16, Mathematics 24 (or former 31).

106 *Optics* (3)
Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 16, Mathematics 24 (or former 31).

113 *Atomic Physics* (3)
Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 16, 101 or 105, or the equivalent; Mathematics 24 (or former 31).

128 *Sound* (3)
Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 16, Mathematics 24 (or former 31).

132 *Electronics* (3)
Lecture (2 hours), laboratory (3 hours). The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 16 and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11.

201 *Classical Physical Theory* (3)
Classical nonrelativistic and relativistic field theories. Prerequisite: Physics 101 and 105; Mathematics 112, 171. (Mathematics 171 may be taken concurrently.)

202 *Classical Physical Theory* (3)
Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 112, 171.

POLITICAL SCIENCE

Chairman: Hugh Linus LeBlanc, Ph.D., Associate Professor of Political Science, Hall of Government, Room 406 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 684

1 *Introduction to Government* (3)
Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations.

9–10 *Government of the United States* (3–3)
First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels.

99–100 *Research* (3–3)

107 *Problems in Modern Political Thought* (3)
Developments of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries.

111 *Introduction to Comparative Government and Politics* (3)
Government and politics of the principal constitutional democracies of Western Europe: Great Britain and France.

112 *Introduction to Comparative Government and Politics* (3)
Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union.

113 *Political Problems of the British Commonwealth of Nations* (3)
From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in the principal Commonwealth states; problems of new states in Asia and Africa.

121–22 *The Constitution of the United States* (3–3)
Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights.

145 *Political Parties and Politics* (3)
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress.

146 *Political Pressures and Public Reactions* (3)
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy.

151–52 *Public Administration* (3–3)
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests.

171 *International Politics* (3)
Basic forces underlying the conduct of international relations and the formation of foreign policy; power politics, imperialism, collective security, and international cooperation.

172 *International Organization: the United Nations* (3)
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations.

181 *International Law* (3)
Survey of the public law of nations with emphasis on the law of peace.

191 *Politics of the Middle East* (3)
Domestic and international politics of Turkey, Iran, Israel, and the Eastern Arab States and Principalities. Special attention to the specifically regional aspect of the foreign policies of these countries.

192 *Politics of North and Central Africa* (3)
Domestic and international politics of the Western Arab States, Ethiopia, Somalia, Liberia, and the newly independent states of former British, French, and Belgian Africa. Special attention to the specifically regional aspect of the foreign policies of these countries.

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)
Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region.

212 *Seminar: Comparative Government and Politics* (3)
Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships. Each semester is devoted to a selected country or significant institutional or policy problem. Attention will be directed to questions of method.

260 *Fundamentals of National Power** (3)

261 *International and United States Foreign Policy** (3)

262 *National Security Policy of the United States** (3)

271–72 *Problems in International Politics and Organization* (3–3)
A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations.

283 *Topics in International Law* (3)
A consideration of theory, problems, and cases in the public law of nations including the law of peace and the law of war.

285 *Diplomacy Since World War II* (3)
Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

297 *Readings in International Affairs* (1 to 2)

299–300 *Thesis* (3–3)

PSYCHOLOGY

Chairman: John Lincoln Finan, Ph.D., Professor of Psychology, Monroe Hall, Room 426 (2115 G Street NW.), FEderal 8-0250, Extension 283

1 *General Psychology*† (3)
The fundamental principles underlying human behavior.

8 *Psychology of Adjustment* (3)
(Formerly Psychology 4)
Processes involved in the total adjustment of the individual with emphasis on social environment; development in the individual of adjustment techniques.

22 *Introduction to Educational Psychology* (3)
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

29 *Child Psychology* (3)
A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

* War Colleges' curricula only.
† Psychology 1 is prerequisite to all other courses in psychology.

101 *Abnormal Psychology* (3)
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science.

112 *Adolescent Psychology* (3)
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems.

118 *Physiological Psychology* (3)
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system with special emphasis upon the relations between physiological functioning and behavior.

121 *Educational Psychology* (3)
Advanced course in educational psychology. Designed for those with background in education and psychology.

125 *Mental Hygiene* (3)
A course for teachers in the application of psychological principles to classroom procedures for purposes of assisting the teacher to recognize and deal with early symptoms of maladjustment.

127 *Employee Counseling* (3)
Employee counseling as a management technique and its contribution to management; a survey of its basic objectives, principles, and procedures.

129 *Introduction to Counseling and Guidance* (3)
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling.

131 *Psychological Tests* (3)
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7.

144 *Personnel Psychology* (3)
Psychological concepts and techniques in personnel management and supervision. Applications to government, industry, and military organizations.

145 *Principles of Human Relations* (3)
Survey of the psychological principles involved in dealing with individuals and groups.

148 *Psychology of Advertising and Consumer Behavior* (3)
The motivational and social processes in economic behavior. Consideration of current techniques and findings in motivational research. Evaluation of the effectiveness of mass media, public relations programs, and strategies of persuasion.

149 *Human Relations in Management* (3)
A consideration of the management process in terms of human behavior, with emphasis upon group processes, leadership, social interaction, motivation, and problem-solving techniques. Material fee, $5.

151 *Social Psychology* (3)
The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war.

153 *Psychological Factors in Delinquency* (3)
Historical and sociological factors in delinquency; historical attitudes toward the offender, theory, and practice; patterns of failure; early preventive measures; research in delinquency prediction; rehabilitation as team work by parents, school, community, church, and (where necessary) the institution.

156 *Psychology of Propaganda and Public Opinions* (3)
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity of propaganda, psychological warfare.

209 *Seminar: Psychology of Motivation* (3)
A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach.

225 *Seminar: Mental Hygiene* (3)
A study of mental health problems with special attention to needs of counselors.

231 *Test Construction* (3)
The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics.

244 *Seminar: Job Analysis and Evaluation* (3)

245 *Seminar: Employee Motivation and Morale* (3)
An analysis of organizational behavior, especially with regard to motivation and productivity. The implications of recent research on employee attitudes, the primary group, the effects of various patterns of supervisory leadership, the role of formal and informal organization, and job design.

246 *Seminar: Personnel Measurement Techniques* (3)
Detailed consideration of the techniques of personnel selection and performance evaluation. The use of employment tests, personal data, assessment interviews, and performance ratings.

254 *Seminar: Group Dynamics* (3)
The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes.

255 *Seminar: Techniques of Opinion and Attitude Measurements* (3)
Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc.

264 *Sensitivity Training: Human Relations Laboratory Course* (3)
A sensitivity learning experience in human relations. The course is built around an unstructured group experience with opportunites for individual feedback, experimentation, and practice. The goal of the course is the development of self-insight, situational sensitivity, and diagnostic skills in human relations. Prerequisite: 9 semester hours in psychology or sociology.

265 *Theory and Design in Human Relations Training* (3)
Designed for those interested or involved in conducting human relations training. Theories of learning are reviewed. The laboratory approach to human relations training is explored in depth. Practice in designing, developing training skills, and evaluation of training are covered. Prerequisite: Psychology 264 or a human relations laboratory learning experience.

267 *Theories of Organization* (3)
Theory and research in formal organizations. Classical, human relations, and information processing theories of organizations. The effects of organizational design on communication processes, leadership, decision-making, intergroup relations, small group formation, status hierarchies, productivity, motivation, and morale. Open to graduate students in psychology and graduate administrative programs.

299–300 *Thesis* (3–3)

RELIGION

Chairman: Robert Gean Jones, B.D., Ph.D., Associate Professor of Religion, Building O, Room 10 (2106 G Street NW.), FEderal 8-0250, Extension 279

9 ***The Old Testament*** (3)
A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities.

10 ***The New Testament*** (3)
A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles.

59–60 ***History of Religion*** (3–3)
First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half*: Judaism, Christianity, and Islam—analysis of their orgin, evolution, and contemporary status.

191 ***Christian Education in the Church*** (3)
Principles of religious education; factors conditioning Christian growth; functions of family, church, community, and state.

192 ***Christian Education in the Church*** (3)
The unified program of the the church; worship, study, and service; developing lay educational leadership; housing and equipment; curriculum construction; evaluation of materials; lesson planning and teaching methods.

ROMANCE LANGUAGES AND LITERATURES

Chairman: William Graham Clubb, Ph.D., Professor of French, Building A, Room 23 (2026 G Street NW.), FEderal 8-0250, Extension 425, 426

FRENCH

1–2 ***First-year French*** (3–3)
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose.

3–4 ***Second-year French*** (3–3)
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Prerequisite: French 1–2 or two years of high school French.

SPANISH

1–2 *First-year Spanish* (3–3)
A year course: credit is not given for the first half until the second half is completed. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose.

3–4 *Second-year Spanish* (3–3)
A year course: credit is not given for the first half until the second half is completed. Conversation, grammar composition, reading of modern Spanish prose, introduction to Hispanic civilization. Prerequisite: Spanish 1–2 or two years of high school Spanish.

SECRETARIAL STUDIES

1 *Elementary Typewriting* (3)
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms.

2 *Intermediate Typewriting* (3)
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalant; ability to type accurately at 30 words a minute.

11 *Elementary Shorthand and Transcription* (3)
A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained.

12 *Intermediate Shorthand and Transcription* (3)
Review of the principles of Gregg Shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; abilty to take dictation at 60 words a minute.

15 *Advanced Shorthand, Typewriting, and Transcription* (3)
Dictation and transcription involving vocabularies in specific businesses. *Mimimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent.

16 *Secretarial Shorthand, Typewriting, and Transcription* (3)
Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent.

51 *Business Correspondence* (3)
Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature.

54 *Secretarial Practice* (3)
A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships.

SLAVIC LANGUAGES AND LITERATURES

Chairman: Helen Bates Yakobson, B.S., Associate Professor of Russian, Building X, Room 2 (2107 H Street NW.), FEderal 8-0250, Extensions 275, 496.

1–2 *First-year Russian* (3–3)
A year course: credit is not given for the first half until the second half is completed. A beginner's course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice.

1S–2S *Scientific Russian for Beginners** (3–3)
An introduction to the essentials of Russian grammar and reading of modern scientific texts.

3–4 *Second-year Russian* (3–3)
A year course: credit is not given for the first half until the second half is completed. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics.

9–10 *Russian Conversation* (3–3)
Listening comprehension and oral practice. Prerequisite: Russian 3–4 or permission of the instructor.

101–2 *Readings in Modern Russian* (3–3)
Representative Russian readings in the social sciences and Soviet periodical literature; study of current political terminology, abbreviations, and Sovet idiom.

103–4 *Scientific Russian* (3–3)
Readings in major fields of Russian contemporary scientific literature.

SOCIOLOGY AND ANTHROPOLOGY

Acting Department Chairman: Richard Walton Stephens, Ph.D., Professor of Sociology and Anthropology, Monroe Hall, Room 200 (2115 G Street NW.), FEderal 8-0250, Extension 201

SOCIOLOGY

2 *Man, Culture, and Society II*† (3)
(Formerly Sociology and Anthropology 1)
Development of culture and personality, the impact of groups and institutions on man's social behavior. A survey of the fields within sociology.

41 *American Social Problems* (3)
(Formerly Sociology and Anthropology 2)
Analysis of major social problems confronting the United States. Factors producing social problems; their nature and treatment.

* This is a special course. It cannot serve as a prerequisite to any advanced course in Slavic Languages and Literatures.
† Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

126 *Urban Sociology* (3)
The place of the city in the larger society; growth of the city, problems of urban living, group life, personality, urban housing, and city planning. Includes consideration of suburban development.

131 *Social Institutions* (3)
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American Society.

132 *Courtship and Marriage* (3)
Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marital adjustment; prediction and counseling.

135 *Juvenile Delinquency* (3)
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders.

136 *Criminology* (3)
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime.

148 *Methods of Social Research* (3)
(Formerly Sociology and Anthropology 181)
Analysis of social research techniques and the scientific method; application to social data of the case study, social survey, statistical, sociometric, and experimental methods.

221 *Seminar: Current Trends in Sociology* (3)
Analysis and evaluation of recent developments in sociology and an appraisal of the role of systematic theory in sociology.

235 *Social Movements* (3)
(Formerly Sociology and Anthropology 162)
Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and showing the way social movements develop.

241 *Population Problems* (3)
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies: eugenics and birth control.

ANTHROPOLOGY

1 *Man, Culture and Society I** (3)
(Formerly Sociology and Anthropology 51)
The physical evaluation of man and the origins and development of culture, including a survey of the topic divisions of the field.

152 *Physical Anthropology* (3)
A survey of human biology. The mechanisms of speciation and the race process, including their cultural determinants.

263 *Culture, Contact, and Change* (3)
Western impact on non-Western cultures. The workings and the processes of social change as variant cultures and ethical systems interact.

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* Anthropology 1 and Sociology 2 combine to make a year course, which is prerequisite to all other courses in Sociology and Anthropology.

SPEECH

Chairman: Lubin Poe Leggette, A.M., Ed.D., Depew Professor of Speech, Lisner Auditorium, Room 4 (730 Twenty-first Street NW.), FEderal 8-0250, Extension 293

1 *Effective Speaking* (3)
Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2.

2 *Persuasive Speaking* (3)
A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion.

11 *Voice and Diction* (3)
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4.

111 *Effective Speech Communication** (3)
The tools and principles of effective speech communication, including practice in the organization, delivery, and the evaluation of presentations commonly encountered by professional personnel. Not open to speech majors.

121 *Group Discussion and Conference Leadership* (3)
The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor.

169 *Creative Dramatics* (3)
A study of creative dramatics and its use as a learning tool.

170 *Children's Theater* (3)
Theory and practice in creating and producing plays for children.

STATISTICS

Chairman: Harold Frederick Bright, Ph.D., Professor of Statistics, Hall of Government, Room 401 (710 Twenty-first Street NW.), FEderal 8-0250, Extension 296

51 *Introduction to Business and Economic Statistics*† (3)
Lecture (2 hours), laboratory (2 hours). Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

52 *Mathematics of Finance*‡ (3)
Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

* This course can be adapted to the needs of a specific group.
† Statistics 51 is offered only on campus. However, Statistics 101-2: *Basic Principles of Statistical Methods* (3–3), which is offered off campus, may be substituted.
‡ This course is offered on campus only.

91 *Principles of Statistical Methods** (3)
Lecture (2 hours), laboratory (2 hours). Variates and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

101–2 *Basic Principles of Statistical Methods* (2 or 3–3)
Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions. (This course is offered both on and off campus.)

104 *Statistics in Psychology and Education* (3)
Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques necessary for application of statistics in research problems in psychology and education.

110 *Quality Control Techniques* (3)
Applications of probability and distribution theory to industrial control problems; use of quality control charts; acceptance sampling plans; estimation of lot and process characteristics. Prerequisite: Statistics 51 or permission of instructor.

117 *Analysis of Variance I* (3)
Lecture (2 hours), laboratory (2 hours). The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Prerequisite: Statistics 91.

207–8 *Operations Analysis* (3–3)
Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queueing theory. Admission by permission of the instructor.

271–72 *Statistical Information Theory* (3–3)
A year course: credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison or experiments.

ZOOLOGY

Chairman: Ira Bowers Hansen, Ph.D., Professor of Zoology, Building C, Room 302 (2029 G Street NW.), FEderal 8-0250, Extension 452

BIOLOGY†

1–2 *Introductory Biology*† (4–4)
This course is designed to provide the nonscience student with an understanding of the life sciences and to serve as a basis for those who may wish to continue in some aspect of biology. It is the introductory course leading to all second- and third-group courses in botany and zoology, and is taught jointly by the staff members of the two departments. Designed to be taken in either sequence; students may be registered for either 1 or 2. Material fee, $10 a semester.

* This course is offered on campus only.
† Biology 1–2 *Introductory Biology* (4–4) replaces Botany 1–2 *General Botany* (3–3) and Zoology 1–2 *Introduction to Zoology* (4–4).

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* On sabbatical leave spring semester 1963–64.

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provisions of Washington's will, and the stock he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government."

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "that persons of every religious denomination shall be capable of being elected Trustees: nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the excercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the College was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Nearby buildings accommodated the School of Medicine and somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes thirteen colleges, schools, and divisions, as follows:

Columbian College of Arts and Sciences offers the four-year programs leading to the degrees of Bachelor of Arts and Bachelor of Science. In cooperation with the Department of Pathology and the University Hospital, it offers a course in Medical Technology leading to the degree of Bachelor of Science in Medical Technology. In addition to the four-year programs. Columbian College offers two-year curricula, including preprofessional and terminal, leading to the degrees of Associate in Arts and Associate in Science. At the graduate level, Columbian College offers studies leading to the degrees of Master of Arts, Master of Science, and Master of Fine Arts.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The National Law Center includes the Law School and the Graduate School of Public Law. The Law School offers professional courses leading to the degree of Bachelor of Laws. The Graduate School of Public Law offers programs leading to the degrees of Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering and Applied Science offers courses leading to the Engineering Technologists Certificate and the degree of Bachelor of Science in the following areas: Civil Engineering, Communications, Control Systems, Electrical Engineering, Electronics, Energy Conversion, Engineering Science, Machine Computers, Measurement Science, Mechanical Engineering, Structures, Theoretical and Applied Mechanics. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Pharmacy offers courses leading to the degree of Bachelor of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education, Educational Specialists, and Doctor of Education.

The School of Government, Business, and International Affairs offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in International Affairs or Public Affairs; (2) Bachelor of Business Administration with a major in Accounting, Business Administration, or Business and Economic Statistics; (3) Master of Arts in Government with a major field in Public Administration, Public Affairs, International Affairs, Economic Policy, Business and Economic Statistics, and Personnel Administration; (4) Master of Business Administration with a major field in Accounting, Business Administration, Health Care (including Hospital) Administration, or Personnel Administration; (5) Master of Public Administration in the fields of Public Administration or Personnel Administration; (6) Doctor of Business Administration or Doctor of Public Administration.

The College of General Studies supplements the adult education program of the University through Off-Campus Study; Campus Study; Institutes, Conferences, and Special Projects; and Continuing Education and Noncredit Programs. This College offers programs leading to the degrees of Associate in Arts; Associate in Science; Associate in Secretarial Administration; Bachelor of Arts; Bachelor of Science in Cartography; Bachelor of Business Administration; Master of Arts in the fields of Financial Management, Governmental Administration, and Personnel Administration; Master of Science in Business Administration; Master of Arts in International Affairs; Master of International Affairs; and Master of Science in Public Administration.

The Division of University Students makes available campus courses for mature students, not candidates for degrees in this University.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government.

GOVERNMENT

The government and general education management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classs. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street NW., Washington, D. C. 20006.

All alumni are urged to keep the Alumi Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

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UNIVERSITY BUILDINGS

Addresses of University Buildings Referred to in this Directory	Abbreviation
Bacon Hall, 2000 H Street	Bacon
Binney Hall, 2018 Eye Street	Binney
Chapin Hall, 2128 H Street (rear)	Chapin
Corcoran Hall, 725 Twenty-first Street	Cor
Davis-Hodgkins House, 731 Twenty-second Street	D-H House
Hall of Government, 710 Twenty-first Street	Govt
Harlan-Brewer House, 1923 H Street	H-B H
International House, 2110 G Street	Int H
Lisner Auditorium, 730 Twenty-first Street	Aud
Monroe Hall, 2115 G Street	Mon
Samson Hall, 2036 H Street	Samson
School of Medicine, 1335–1339 H Street	MS
Staughton Hall, 707 Twenty-second Street	Stau
Stockton Hall, 720 Twentieth Street	Sto
Student Union, 2125 G Street	Stu Union
Tompkins Hall of Engineering, 725 Twenty-third Street	Tompkins
University Library, 2023 G Street	Libr
Woodhull House, 2033 G Street	Woodhull
Building A, 2026 G Street	A
Building A-A, 2129 Eye Street	A-A
Building B, 2024 G Street	B
Building B-B, 2204 Eye Street	B-B
Building C, 2029 G Street	C
Building C-C, 2035 H Street	C-C
Building D, 2013 G Street	D
Building D-D, 2120 Eye Street	D-D
Building E, 2003 G Street	E
Building E-E, 816 Twenty-first Street	E-E
Building F, 706 Twentieth Street	F
Building G, 712 Twentieth Street	G
Building H, 714–16 Twentieth Street	H
Building I, 2135 G Street	I
Building J, 2131 G Street	J
Building K, 817 Twenty-third Street	K
Building L, 2129 G Street	L
Building M, 716 Twenty-first Street	M
Building N, 718 Twenty-first Street	N
Building O, 2106 G Street	O
Building P, 2108 G Street	P
Building Q, 2029 H Street	Q
Building R, 2027 H Street	R
Building S, 2025 H Street	S
Building T, 2110 G Street	T
Building U, 729 Twenty-second Street	U
Building V, 2114 H Street	V
Building W, 2128 H Street	W
Building X, 2107 H Street	X
Building Y, 802 Twenty-first Street	Y
Building Z, 708 Twenty-second Street	Z

CAMPUS OFFICE DIRECTORY

Name	Room	Extension
Accounting	Govt 100	243, 610
Addressograph	Bacon 10	575
Administrative Secretary	Bldg E	641, 642
Admissions	C-101	344
Evaluators	C-101	349
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Medical School	1335 H St	209
Air Force Advanced Management Program	Govt 205	404, 588
Air Science, Department of	Chapin	521
Alumni Office	Bacon 100	305, 369
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Assistant to the President (R. S. Jordan)	Bldg E	322
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Voucher Section	Samson 100	223
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Assistant Dean (Research)	Tompkins 104	249
Assistant to the Dean	Tompkins 103	246
English, Department of	D-403	276
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Faculty Conference Room	Libr 5th fl	506
Faculty Dining Room	714 21st St	368
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Government and Business, Department of	Govt 201	512, 539
Government, Business and International Affairs, School of	Govt 204	661
Graduate Council	Bacon 201	362, 744
Guard Office	D-2	314, 618
		FE 8-0292
Hatchet	Stu Union	FE 7-1451
Health Care Administration	Bldg EE	574, 676
Health Services:		
Castell, R. B. (Director)	Mayflower Hotel	
		DI 7-3000
Pugh, H. L	P-10	365, 524
Callan, M. E	P-10	365, 524
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		FE 3-9000
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Biometric Laboratory	1145 19th St	632 FE 3-6113
Center for Measurement Science	Tompkins 104	249
Chemistry Research Project	Cor 311	465
Community Health Services Project	Bldg EE	442
Computer Programs Research Project	Bldg AA	694
Driver Behavior Research Project	Bldg U	625
Human Resources Research Office	N. Washington and Queen Sts., Alexandria, Va.	549-3611
Information Sciences Research Project	Tompkins 406	245, 568
Management Research Group	Bacon 300	551
Mental Competency Study	1815 H St	700
NASA Economics Project	Bacon 201	362, 744
NASA Space Flight Telemetry Project	Tompkins M-2	525
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Residence Halls:		
Adams Hall	730 19th St	
Manager		579
1st floor		RE 7-9301
2d floor		EX 3-8842
3d floor		EX 3-9033
4th floor		EX 3-9687
5th floor		EX 3-9639
6th floor		ST 3-9842
7th floor		EX 3-9544
8th floor		EX 3-9823
Basement		ST 3-9673
Calhoun Hall	2100 Eye St.	
Manager		677
1st floor		333-9430
2d floor		333-9446
3d floor		333-9483
4th floor		333-9728
5th floor		337-9654
6th floor		337-9604
7th floor		337-9613
8th floor		337-9640
Crawford Hall	2119 H St, 689	965-2626
Devens Hall	20 Plattsburg Court	
2d floor		244-9809, 244-9810
3d floor		244-9808, 244-9811
Hancock Hall	3665 38th St	
1st floor		WO 6-9888, 966-9659, 966-9793
2d floor		WO 6-9827, 966-9811
3d floor		WO 6-9848, 966-9897
Madison Hall	736 22d St, 561	FE 3-9220
Strong Hall	620 21st St, 444	338-8460
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Assistant	Stu Union	378

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THE GEORGE WASHINGTON UNIVERSITY, 1821

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE COUNCIL, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1959

THE LAW SCHOOL, 1865

THE GRADUATE SCHOOL OF PUBLIC LAW, 1959

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF PHARMACY, 1906

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT, BUSINESS, AND INTERNATIONAL AFFAIRS, 1928

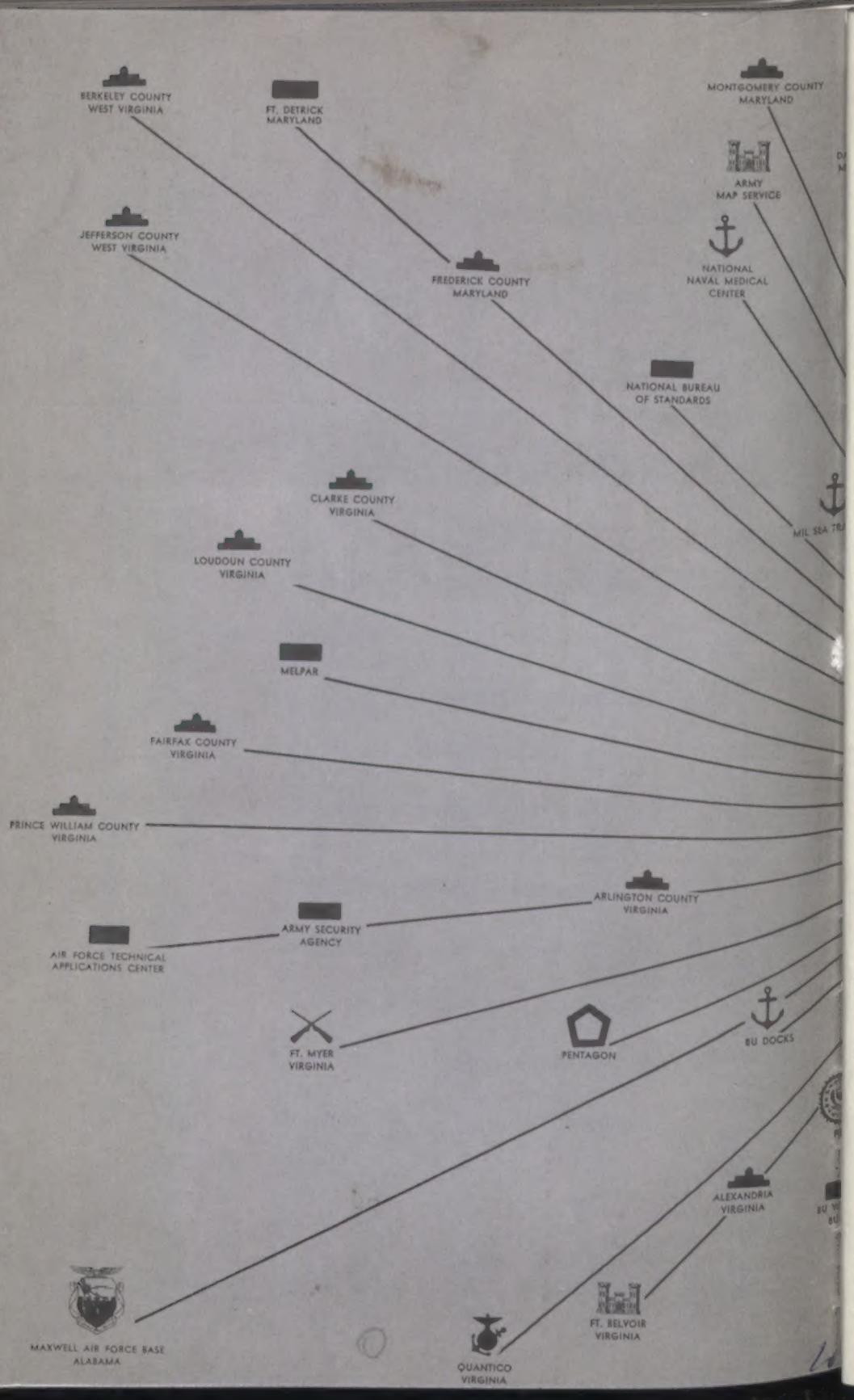
THE COLLEGE OF GENERAL STUDIES, 1950

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE DIVISION OF AIR SCIENCE, 1951

THE SUMMER SESSIONS, 1916

THE UNIVERSITY HOSPITAL, 1898


BERKELEY COUNTY
WEST VIRGINIA
FT. DETRICK
MARYLAND
MONTGOMERY COUNTY
MARYLAND
ARMY
MAP SERVICE
JEFFERSON COUNTY
WEST VIRGINIA
FREDERICK COUNTY
MARYLAND
NATIONAL
NAVAL MEDICAL
CENTER
NATIONAL BUREAU
OF STANDARDS
CLARKE COUNTY
VIRGINIA
LOUDOUN COUNTY
VIRGINIA
MELPAR
FAIRFAX COUNTY
VIRGINIA
PRINCE WILLIAM COUNTY
VIRGINIA
ARLINGTON COUNTY
VIRGINIA
ARMY SECURITY
AGENCY
AIR FORCE TECHNICAL
APPLICATIONS CENTER
FT. MYER
VIRGINIA
PENTAGON
BU DOCKS
ALEXANDRIA
VIRGINIA
FT. BELVOIR
VIRGINIA
MAXWELL AIR FORCE BASE
ALABAMA
QUANTICO
VIRGINIA